0000064954

RECEIVED

2007 MAR 12 P 3: 09

AZ CORP COMMISSION
DOCUMENT CONTROL

Transcript Exhibit(s)

Docket#(s): SW-20379A-05-0489

W-20380A-05-0490

Arizona Corporation Commission
DOCKETED
MAR 12 2007
DOCKETED BY NR

Exhibit # · A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16

A17, A18, A19, A20, A21, A22, A24, A25, A26, A27, A28

A31, A34, A37, A39, A41, A43, A44, A45, A46, A47

A48, A49, A50, A53, A54, COM EX1, MUNDELL 1,
MAYES 2, MUNDELL 2, MAYES 1, S4, S5, S7, S8,
S9, S12, S13, S16, S18, S19, S22, S23, S25, S24.

STATE OF ARIZONA

Office of the
CORPORATION COMMISSION

CERTIFICATE OF GOOD STANDING

To all to whom these presents shall come, greeting:

I, Brian C. McNeil, Executive Director of the Arizona Corporation Commission, do hereby certify that

******PERKINS MOUNTAIN WATER COMPANY******

a foreign corporation organized under the laws of Nevada did obtain authority to transact business in the State of Arizona on the 23rd day of June 2005.

I further certify that according to the records of the Arizona Corporation Commission, as of the date set forth hereunder, the said corporation has not had its authority revoked for failure to comply with the provisions of the Arizona Business Corporation Act; and that its most recent Annual Report, subject to the provisions of A.R.S. sections 10-122, 10-123, 10-125 & 10-1622, has been delivered to the Arizona Corporation Commission for filing; and that the said corporation has not filed an Application for Withdrawal as of the date of this certificate.

This certificate relates only to the legal authority of the above named entity as of the date issued. This certificate is not to be construed as an endorsement, recommendation, or notice of approval of the entity's condition or business activities and practices.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the Arizona Corporation Commission. Done at Phoenix, the Capital, this 13th Day of February, 2007, A. D.

Executive Director

By

A-5
admitted

STATE OF ARIZONA

Office of the
CORPORATION COMMISSION

CERTIFICATE OF GOOD STANDING

To all to whom these presents shall come, greeting:

I, Brian C. McNeil, Executive Director of the Arizona Corporation Commission, do hereby certify that

******PERKINS MOUNTAIN UTILITY COMPANY******

a foreign corporation organized under the laws of Nevada did obtain authority to transact business in the State of Arizona on the 23rd day of June 2005.

I further certify that according to the records of the Arizona Corporation Commission, as of the date set forth hereunder, the said corporation has not had its authority revoked for failure to comply with the provisions of the Arizona Business Corporation Act; and that its most recent Annual Report, subject to the provisions of A.R.S. sections 10-122, 10-123, 10-125 & 10-1622, has been delivered to the Arizona Corporation Commission for filing; and that the said corporation has not filed an Application for Withdrawal as of the date of this certificate.

This certificate relates only to the legal authority of the above named entity as of the date issued. This certificate is not to be construed as an endorsement, recommendation, or notice of approval of the entity's condition or business activities and practices.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the Arizona Corporation Commission. Done at Phoenix, the Capital, this 13th Day of February, 2007, A. D.

Executive Director

By

A-6
admitted

MOHAVE COUNTY BOARD of SUPERVISORS

P.O. Box 7000 700 West Beale Street Kingman, Arizona 86402-7000
Website - www.co.mohave.az.us TDD - (928) 753-0726

District 1
Pete Byers
(928) 753-0722

District 2
Tom Sockwell
(928) 758-0713

District 3
Buster D. Johnson
(928) 453-0724

County Manager
Ron E. Walker
(928) 753-0729
FAX (928) 718-4957

Clerk of the Board
Barbara Bracken
(928) 753-0731
FAX (928) 753-0732

RECEIVED
MAR 10 2006
SNELL & WILMER

March 8, 2006

Robert J. Metli
Snell & Wilmer
One Arizona Center
Phoenix, AZ 85004-2202

RE: Perkins Mountain Utility Company and Perkins Mountain Water Company

Dear Mr. Metli:

Please be advised at the Mohave County Board of Supervisors meeting held March 6, 2006, the Board approved Franchise Agreements for Perkins Mountain Utility Company and Perkins Mountain Water Company.

Enclosed are copies of the Franchise Agreements. If you have any questions, please do not hesitate to contact this office.

Sincerely,

FOR THE BOARD OF SUPERVISORS

Barbara Bracken

Barbara Bracken, Clerk of the Board

Enclosure

XC: Mohave County Finance
Mohave County Public Works
Mohave County Planning & Zoning

A-7
admitted

FRANCHISE AGREEMENT AND FRANCHISE
FOR
PUBLIC SERVICE CORPORATIONS

Date of Franchise: 03-06-2006

Term of Franchise: 25 years

Renewal Date Option: 03-06-2031

This is a Franchise Agreement between the County of Mohave, State of Arizona, and PERKINS MOUNTAIN WATER COMPANY, authorizing the location, construction, maintenance and operation of water pipelines within the unincorporated areas of Mohave County. This Franchise specifically grants to PERKINS MOUNTAIN WATER COMPANY the privilege of using the Public Rights-of-Way and Easements of Mohave County in accordance with established policies, practices, and procedures of Mohave County and its several departments.

RECITALS

WHEREAS, the Mohave County Board of Supervisors has the duty and responsibility to protect the health, safety and welfare of the residents of Mohave County; and

WHEREAS, the Mohave County Board of Supervisors has the duty and responsibility to assure that Public Rights-of-Way and Easements of Mohave County are used in a responsible manner consistent with the best interests of the residents of Mohave County; and

WHEREAS, the Mohave County Board of Supervisors strives to authorize the use of the Public Rights-of-Way and Easements of Mohave County in a uniform manner among all users; and

WHEREAS, the Mohave County Board of Supervisors deems this form of Franchise Agreement and Franchise to be fair, reasonable and appropriate for Public Service Corporations;

NOW, THEREFORE, the Mohave County Board of Supervisors and PERKINS MOUNTAIN WATER COMPANY do hereby state, promise and agree as follows:

Section 1. DEFINITIONS.

As used in this Franchise Agreement and Franchise, the following terms have been agreed to have the meanings indicated:

A. "Agreement" means this Franchise Agreement and Franchise.

B. "Area of Jurisdiction" means the part of Mohave County for which this Franchise is granted.

C. "Board" means the Mohave County Board of Supervisors.

D. "County" means Mohave County, Arizona.

E. "Emergency" means any occurrence that may arise without prior notice to Franchisee.

F. "Franchise" means this Franchise Agreement and Franchise.

G. "Franchisee" means PERKINS MOUNTAIN WATER COMPANY.

H. "Franchising Authority" means the Mohave County Board of Supervisors.

I. "Franchise Property" means all materials, equipment, and facilities of Franchisee located, constructed, maintained, and/or operated in the Public Rights-of-Way and Easements of Mohave County pursuant to the terms and conditions of this Franchise Agreement and Franchise.

J. "Gross Annual Receipts" means any compensation derived from any Subscriber or User in payment for delivery of a product or services from Franchisee. This meaning shall not include any taxes collected by Franchisee and transmitted to a governmental agency, and it shall not include any amounts collected by Franchisee by virtue of the Franchise Fee provisions of this Franchise.

K. "Intergovernmental Agreement" means the joint exercise of powers authorized by Title 11, Chapter 7, Article 3 of Arizona Revised Statutes.

L. "Public Rights-of-Way and Easements" means that real property located within the unincorporated areas of Mohave County within which the Mohave County Board of Supervisors has the power and authority to grant a Franchise.

M. "Rights-of-Way and Easements" shall mean the surface of, the space above, and the space below the Public Rights-of-Way and Easements reasonably necessary to construct, operate, and maintain the Franchise Property.

N. "Service Area" means the unincorporated areas of Mohave County in which the Franchisee delivers the service for which this Franchise is granted.

O. "Subscriber or User" means any person or entity receiving, for any purpose, the services of the Franchisee.

Section 2. GRANTING OF FRANCHISE.

A non-exclusive Franchise is hereby granted to Franchisee for the purpose of

locating, constructing, and maintaining Franchise Property in the unincorporated area of Mohave County. This Franchise shall include the authority, privilege, and power to construct, operate, and maintain all necessary Franchise Property in, over, under, across, and upon the Public Rights-of-Way and Easements consistent with the terms and conditions of this Franchise.

Section 3. TERM OF FRANCHISE.

This Franchise shall be for an initial term of twenty-five (25) years beginning on the date of Board approval. This term may be extended only by reapplication and grant of an extension. Application for an extension shall be submitted to the Board no sooner than three hundred sixty-five (365) days, nor later than one hundred twenty (120) days, prior to the expiration date of this Franchise.

Section 4. TERMS AND CONDITIONS.

This Franchise shall be subject to the following conditions:

A. This Franchise shall not be deemed to limit the authority of the Board to include other conditions or restrictions which may be necessary for the protection of the health, safety and welfare of the residents of the County and/or for the efficient administration of the Rights-of-Way and Easements in general.

B. This Franchise is non-exclusive.

C. The Board has granted this Franchise in reliance upon the Franchisee's business skill, reputation, financial capacity, and character. Accordingly, this Franchise and/or any interest hereunder shall not be assigned, transferred, conveyed, or otherwise encumbered without the express written consent of the Board. Failure of performance by the Franchisee of any of the terms and conditions of this Franchise may be cause for termination of this Franchise pursuant to Section 16 of this Agreement.

D. No privilege or exemption shall be granted or inferred unless specifically set forth in this Franchise.

E. Any privilege claimed under this Franchise by the Franchisee in any Right of Way or Easement shall be subordinated to any prior lawful occupancy of the Right of Way or Easement.

F. Prior to commencing any activity authorized by this Franchise, the Franchisee shall submit plans and specifications for such activity to the County Public Works Director for approval; provided, however, whenever Franchisee is required to undertake emergency activities required to protect the health, safety and welfare of the public and/or the safety and reliability of the Franchise Property, Franchisee shall notify the County Public Works Director not later than twenty-four (24) hours after notice of the emergency; and provided further, however, should such emergency present an immediate threat or danger to the health, safety and welfare of the public, Franchisee

shall notify the County Manager or the County Public Works Director or the County Emergency Services Coordinator or the Chairman of the Board within one (1) hour of notice of the emergency.

G. Any failure of the Board, or its agents, to promptly enforce compliance of the terms and/or conditions of this Franchise shall not be deemed a waiver of such terms and/or conditions.

H. The Franchisee shall have no recourse against the Board or its agents for any loss, cost, expense, or damage arising out of any term, condition or enforcement of this Franchise.

I. The Franchisee shall be subject to all County rules, regulations and/or specifications pertaining to the use of Public Rights-of-Way and Easements which may be adopted from time to time by the Board.

J. Prior to the grant of this Franchise by the Board, Franchisee shall submit a projected financial statement, and annually thereafter, Franchisee shall submit to the Board a complete financial statement that reflects the current financial status of the Franchisee and a list of names and addresses of proprietors, owners, or beneficial shareholders who hold more than a ten percent (10%) interest in the corporation, organization, or regulated entity.

Section 5. RECORDS TO BE KEPT AND MAINTAINED; REPORTS; INSPECTION OF RECORDS.

A. Franchisee shall prepare and furnish to the Board, or its agents, such reports and records of its operations, affairs, transactions and/or property as the Board deems necessary or appropriate for the enforcement or performance by the Franchisee according to the terms and conditions of this Franchise.

B. Franchisee shall keep and maintain within the County, and make available for County inspection upon reasonable request, full and complete plans and records showing the exact location of all Franchise Property installed and/or in use in the Public Rights-of-Way and Easements.

C. Franchisee shall file with the County Public Works Director, on or before the 31st day of December of each year, a map and/or a set of plans showing all Franchise Property installed and/or in use in the Public Rights-of-Way and Easements current as of the immediately preceding November 30th.

D. Franchisee shall keep its Franchise property in good operating condition, and Franchisee shall cause all customer complaints to be duly investigated and, where the circumstances warrant, corrected within a reasonable period of time. Records reflecting such complaints, and the time and manner in which they are resolved, shall be maintained by the Franchisee for at least one (1) year and shall be made available for inspection by the Board or its agents upon reasonable request.

Section 6. INSTALLATION STANDARDS.

A. Franchisee shall be responsible for meeting all County, State, Federal, and local installation standards.

B. Any other provision of this Franchise notwithstanding, all installations of Franchise Property shall be made in a safe and workmanlike manner and maintained in good condition at all times. Except for the conduct of normal construction and repair activities, all such installations of Franchise Property shall be approximately placed so as not to interfere in any manner with the rights of the public or individual property owners and shall not interfere with the use of public property by the public and shall not obstruct or impede traffic. The Board reserves the right of regulation of the erection and construction of any Franchise Property, by Franchisee and its agents or employees, and to designate where such Franchise Property shall be placed. Franchisee agrees to make changes in its plans, specifications and/or Franchise Property to conform with all requirements of the Board.

C. Franchisee shall be responsible for obtaining all necessary licenses, certificates, permits and approvals from all government authorities having jurisdiction over the activities to be conducted under this Franchise.

Section 7. UNDERGROUND LINES.

Franchisee shall, at its own expense, place its lines underground in areas which it serves where telephone and electric power lines are, or are required to be, underground.

Section 8. LOCATION OF FRANCHISE PROPERTY.

Franchise Property shall be constructed or installed in Public Rights-of-Way and Easements of the County only at such locations and in such manner as shall be approved by the Board or its agents. Construction or installation of Franchise Property shall be in accordance with all Federal, State, and County laws and regulations.

Section 9. REPAIR OF ROADS, STREETS, RIGHTS-OF-WAY AND EASEMENTS.

Franchisee shall, at its own expense, promptly repair and restore any and all roads, streets, sidewalks or other public and/or private property altered, damaged, or destroyed by Franchisee in exercising the privileges granted herein to Franchisee.

Section 10. FAILURE TO PERFORM AS REQUIRED IN SECTION 9 ABOVE.

A. Upon failure of Franchisee, and its agent or employees, to complete any work required by this Franchise, the Board or its agents may notify Franchisee of non-compliance by registered mail. Franchisee shall have fourteen (14) days from the receipt of the notice to complete the repairs or to enter into an agreement with the

Board and/or its agents for the completion of the repairs.

B. If, in the opinion of the County Director of Public Works and/or the County Manager, the failure to repair or complete construction presents a serious and immediate danger to the public health, safety and welfare, they, separately or together, may take immediate action to mitigate the damage. All costs associated with such actions will be the sole responsibility of Franchisee, and Franchisee shall reimburse the County for such costs within thirty (30) days after receipt or an itemized bill.

Section 11. REMOVAL AND ABANDONMENT OF FRANCHISE PROPERTY.

A. In the event the use of any Franchise Property is discontinued for a continuous period of twelve (12) months and Franchisee is unable to reasonably demonstrate the usefulness of such Franchise Property for future use, Franchisee shall either remove such Franchise Property or abandon such Franchise Property in place.

B. In the event Franchise Property is installed in violation of any requirements of this Franchise, and Franchisee fails to take reasonable measures to cure such violation within thirty (30) days after written notice of such violation, Franchisee shall either remove such Franchise Property or abandon such Franchise Property in place.

C. Franchise Property to be abandoned in place shall be abandoned in accordance with applicable law. Upon abandonment of Franchise Property in place, Franchisee shall submit to the Board an instrument satisfactory to the Board transferring the ownership of such Franchise Property to the County.

Section 12. CHANGES REQUIRED BY PUBLIC IMPROVEMENTS.

Franchisee shall, at its own expense, protect, support, temporarily disconnect, relocate in the same street, alley or public place, any Franchise Property when required by the Board or its agents by reason of County Public improvements; provided, however, Franchisee shall have the right to abandon Franchise Property as provided in Section 11 above.

Section 13. INDEMNIFICATION OF COUNTY.

Franchisee shall defend the County against all claims for injury to any person or property caused by the negligence of Franchisee, its agents and/or employees, in the construction or operation of Franchise Property, and, in the event of a determination of liability, shall indemnify the County, the Board, its agents and/or employees. More particularly, Franchisee, its successors and assigns, does hereby agree to indemnify and hold harmless the County, the Board and/or its agents and employees, from any and all liability, claim, demand or judgment arising out of any injury to any person or property as a result of a violation of failure on the part of Franchisee, its successors and assigns, to observe their proper duty or because of negligence in whole or in part arising out of the construction, repair, extension, maintenance, or operation of Franchise

Property of any kind or character used in connection with this Franchise.

Section 14. LIABILITY INSURANCE REQUIRED.

Franchisee agrees that prior to commencing construction, and at all times thereafter, during the existence of this Franchise, Franchisee will carry a minimum of $1,000,000 in excess liability insurance on a combined single limit basis above any permitted self-insured retention. Self-insured retention shall be permitted so long as Franchisee continues to report to the Securities and Exchange Commission of the United States a Total Assets amount in excess of $100,000,000. The insurance coverage required by this Section shall be provided by one or more insurers permitted under Title 20 of Arizona Revised Statutes to transact insurance business. Further, Franchisee shall provide to the Clerk of the Board of Mohave County a Certificate of Insurance naming the County, the Board and/or its agents and employees as additional insured. The Certificate will provide for notification to the Clerk of the Board of Mohave County prior to any change in said policy, or cancellation of said policy, for any reason, including nonpayment of premiums.

Section 15. FRANCHISE FEE.

A. Franchisee shall pay to the County an annual Franchise Fee in an amount equal to two percent (2%) of Franchisee's Gross Annual Receipts derived from the operation of Franchise Property so long as the Board shall have the authority to levy a Franchise Fee. Further, Franchisee shall not be required to pay to the County any other Franchise fee or Permit fee in connection with this Franchise. There shall be no offsets for any other taxes or assessments, *i.e.*, sales tax, fuel tax, personal property tax, general ad valorem property tax, special assessments for local improvements or any other tax or assessment not directly related to the use of the Public Rights-of-Way and Easements that may be required of Franchisee by any government agency.

B. The annual Franchise Fee shall be paid no later than the first (1st) day of May following each calendar year during the term of this Franchise. All such payments shall be made to the Mohave County Finance Department, P.O. Box 7000, Kingman, Arizona 86402-7000. So long as the Board shall have the authority to levy a Franchise Fee, failure to pay such Franchise Fee by the first (1st) day of May following the calendar year is a material breach of this Franchise Agreement and is subject to the termination provisions of Section 16 hereinafter.

C. The Board shall have the right to inspect and audit all Franchisee's books and records which may be necessary in determining Franchisee's Gross Annual Receipts derived from the use of the Public Rights-of-Way and Easements and the right of audit and re-computation of any amount paid under this Section; provided, however, that the right of re-computation shall be limited to the two (2) calendar years immediately preceding the initiation of any such audit. Financial statements required by this Franchise Agreement for each calendar year shall be submitted annually on or before April 15 of each year. No acceptance of any payment shall be construed as a

release or accord and satisfaction of any claim the County may have for further or additional sums payable under this Section or for the performance of any obligation under this Franchise Agreement.

D. The percentage of Gross Annual Receipts set forth in this Section and the insurance requirements set forth in Section 14 above shall be subject to reevaluation by the Board every fifth (5th) year of this Franchise; provided, however, that no reevaluation shall occur so long as Franchisee continues to report to the Securities and Exchange Commission of the United States a Total Assets amount in excess of $100,000,000. If reevaluation of the amounts due under this Section or the insurance requirements set forth in Section 14 above should result in a dispute between the parties, the dispute shall be presented to a neutral Arbitration Board for decision and settlement. The Arbitration Board shall consist of either one person mutually acceptable to the parties to this Franchise Agreement or to the American Arbitration Association. In the event of arbitration, the parties shall each pay their individual costs for such arbitration. The standard procedures and policies of arbitration shall apply in all cases.

Section 16. TERMINATION.

A. This Franchise Agreement and Franchise may be terminated by the mutual consent of the Board and the Franchisee evidenced by a writing.

B. This Franchise Agreement and Franchise, and all rights granted hereunder, may be terminated by the Board upon any breach of the terms and conditions hereof by Franchisee and Franchisee's failure to undertake reasonable measures to cure such breach within thirty (30) days subsequent to Franchisee's receipt of written notice of such breach. Written notice shall be by registered mail.

Section 17. OTHER PROVISIONS.

Franchisee shall keep a copy of its current Tariffs applicable to the Subscribers or Users in Mohave County on file with the Clerk of the Board of Mohave County.

Section 18. RESERVATION OF POWERS.

A. There is hereby reserved to the Board every right and power which is required to be reserved and Franchisee, by its acceptance of this Franchise, agrees to be bound thereby and to comply with any action or requirements of the Board in its exercise of any such right of power enacted or established.

B. Neither the granting of this Franchise nor any of the provisions contained herein shall be construed to prevent the Board from granting any identical, or similar, Franchise to any person or corporation other than the Franchisee.

Section 19. SEVERABILITY.

In the event any provision of this Agreement is rendered inoperative by virtue of

the entry of a final judgment of a Court of competent jurisdiction, such event shall not affect any other provision of this Agreement that can be given effect without such inoperative provision and, for this purpose, the provisions of this Agreement are hereby declared to be severable.

Section 20. OFFICIAL NOTICES.

Notices concerning this Franchise Agreement and Franchise shall be sent to:

FOR THE COUNTY:	FOR FRANCHISEE:
Clerk of the Board Mohave County P.O. Box 7000 Kingman, AZ 86402-7000	President Perkins Mountain Water Company 2214 Hualapai Mountain Road Suite H Kingman, AZ 86401

Section 21. EFFECTIVE DATE.

This Franchise shall take effect upon the date of approval by the Board.

APPROVED by the Mohave County Board of Supervisors this 6 day of March, 2006.

FOR THE BOARD:	ACCEPTED FOR FRANCHISEE:
Tom Sackrell Chairman of the Board	President

APPROVED AS TO FORM:	ATTEST:
County Attorney	Barbara Bracken Clerk of the Board

BOARD OF SUPERVISORS MOHAVE CO. ARIZONA

ATTACHMENT "A"
Legal Description

TOWNSHIP 20 NORTH, RANGE 18 WEST, G.& S.R.M., MOJAVE COUNTY, AZ:

SECTION 2, EXCEPT THE W2 NW4 NW4 NE4 NE4, & THE SE4 SE4;
SECTION 3;
SECTION 4;
SECTION 8, EXCEPT THE W2 NW4 NW4 NE4;
SECTION 9;
SECTION 10;
SECTION 11, EXCEPT THE S2 SE4 SE4 SE4;
SECTION 14, EXCEPT THE E2 NE4, THE NE4 SE4, THE E2 W2 SE4 SE4, & THE E2 SE4 SE4;
SECTION 16.

TOWNSHIP 21 NORTH, RANGE 18 WEST, G.& S.R.M., MOJAVE COUNTY, AZ:

SW4 SECTION 34.

TOWNSHIP 27 NORTH, RANGE 20 WEST, G.& S.R.M., MOHAVE COUNTY, AZ:

SECTION 16, EXCEPT THE NW4 NE4, & THE E2 NE4;
W2 W2 SECTION 17;
SECTION 20;
SECTION 21, EXCEPT THE SW4, & THE S2 SW4 NW4;
SECTION 23, EXCEPT THAT PORTION WITHIN THE BOUNDARIES OF BONITA M.S. 1253A, AS SET FORTH IN SAID PATENT.
ALL OF SECTION 30 LYING SOUTHERLY OF THE CENTERLINE OF WHITE HILLS ROAD (O.R. 274/50-97), EXCEPT THE SW4, & THE SW4 SE4.

TOWNSHIP 27 NORTH, RANGE 21 WEST, G. & S.R.M., MOHAVE COUNTY, AZ:

A PORTION OF THE E2 SECTION 25 DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF THE SOUTHEAST QUARTER (SE ¼) OF SAID SECTION 25; THENCE SOUTH 00°28'58" WEST, ALONG THE EASTERLY LINE THEREOF, 2,643.95 FEET TO THE SOUTHEAST CORNER OF SAID SOUTHEAST QUARTER (SE ¼); THENCE NORTH 89°33'42" WEST, ALONG THE SOUTHERLY LINE THEREOF, 164.23 FEET TO THE POINT OF CURVE OF A NON TANGENT CURVE TO THE LEFT, OF WHICH THE RADIUS POINT LIES SOUTH 74°14'59" WEST, A RADIAL DISTANCE OF 5,821.58 FEET, SAID POINT BEING ON THE EASTERLY RIGHT-OF WAY LINE OF U.S. HIGHWAY 95; THENCE NORTHERLY ALONG THE ARC, ALONG SAID EASTERLY RIGHT-OF-WAY LINE, THROUGH A CENTRAL ANGLE OF 07°34'58", 770.46 FEET; THENCE NORTH 23°19'59" WEST, CONTINUING ALONG SAID EASTERLY RIGHT-OF-WAY LINE, 2,685.36 FEET TO THE CENTERLINE WHITE HILLS ROAD (O.R. 274/50-97); THENCE NORTH 68°20'45" EAST, ALONG SAID CENTERLINE, 1,632.40 FEET TO THE EASTERLY LINE OF THE NORTHEAST QUARTER (NE ¼) OF SAID SECTION 25; THENCE SOUTH 00°28'34" WEST, ALONG SAID EASTERLY LINE, 1,151.09 FEET TO THE POINT OF BEGINNING.

MOHAVE COUNTY BOARD of SUPERVISORS

P.O. Box 7000 700 West Beale Street Kingman, Arizona 86402-7000
Website - www.co.mohave.az.us TDD - (928) 753-0726

District 1
Pete Byers
(928) 753-0722

District 2
Tom Sockwell
(928) 758-0713

District 3
Buster D. Johnson
(928) 453-0724

County Manager
Ron E. Walker
(928) 753-0729
FAX (928) 718-4957

Clerk of the Board
Barbara Bracken
(928) 753-0731
FAX (928) 753-0732

RECEIVED
MAR 10 2006
SNELL & WILMER

March 8, 2006

Robert J. Metli
Snell & Wilmer
One Arizona Center
Phoenix, AZ 85004-2202

RE: Perkins Mountain Utility Company and Perkins Mountain Water Company

Dear Mr. Metli:

Please be advised at the Mohave County Board of Supervisors meeting held March 6, 2006, the Board approved Franchise Agreements for Perkins Mountain Utility Company and Perkins Mountain Water Company.

Enclosed are copies of the Franchise Agreements. If you have any questions, please do not hesitate to contact this office.

Sincerely,

FOR THE BOARD OF SUPERVISORS

Barbara Bracken

Barbara Bracken, Clerk of the Board

Enclosure

XC: Mohave County Finance
Mohave County Public Works
Mohave County Planning & Zoning

A-8
admitted

FRANCHISE AGREEMENT AND FRANCHISE
FOR
PUBLIC SERVICE CORPORATIONS

Date of Franchise: 03-06-2006

Term of Franchise: 25 years

Renewal Date Option: 03-06-2031

This is a Franchise Agreement between the County of Mohave, State of Arizona, and PERKINS MOUNTAIN UTILITY COMPANY, authorizing the location, construction, maintenance and operation of ~~water~~ waste pipelines within the unincorporated areas of Mohave County. This Franchise specifically grants to PERKINS MOUNTAIN UTILITY COMPANY the privilege of using the Public Rights-of-Way and Easements of Mohave County in accordance with established policies, practices, and procedures of Mohave County and its several departments.

RECITALS

WHEREAS, the Mohave County Board of Supervisors has the duty and responsibility to protect the health, safety and welfare of the residents of Mohave County; and

WHEREAS, the Mohave County Board of Supervisors has the duty and responsibility to assure that Public Rights-of-Way and Easements of Mohave County are used in a responsible manner consistent with the best interests of the residents of Mohave County; and

WHEREAS, the Mohave County Board of Supervisors strives to authorize the use of the Public Rights-of-Way and Easements of Mohave County in a uniform manner among all users; and

WHEREAS, the Mohave County Board of Supervisors deems this form of Franchise Agreement and Franchise to be fair, reasonable and appropriate for Public Service Corporations;

NOW, THEREFORE, the Mohave County Board of Supervisors and PERKINS MOUNTAIN UTILITY COMPANY do hereby state, promise and agree as follows:

Section 1. DEFINITIONS.

As used in this Franchise Agreement and Franchise, the following terms have been agreed to have the meanings indicated:

A. "Agreement" means this Franchise Agreement and Franchise.

B. "Area of Jurisdiction" means the part of Mohave County for which this Franchise is granted.

C. "Board" means the Mohave County Board of Supervisors.

D. "County" means Mohave County, Arizona.

E. "Emergency" means any occurrence that may arise without prior notice to Franchisee.

F. "Franchise" means this Franchise Agreement and Franchise.

G. "Franchisee" means PERKINS MOUNTAIN UTILITY COMPANY.

H. "Franchising Authority" means the Mohave County Board of Supervisors.

I. "Franchise Property" means all materials, equipment, and facilities of Franchisee located, constructed, maintained, and/or operated in the Public Rights-of-Way and Easements of Mohave County pursuant to the terms and conditions of this Franchise Agreement and Franchise.

J. "Gross Annual Receipts" means any compensation derived from any Subscriber or User in payment for delivery of a product or services from Franchisee. This meaning shall not include any taxes collected by Franchisee and transmitted to a governmental agency, and it shall not include any amounts collected by Franchisee by virtue of the Franchise Fee provisions of this Franchise.

K. "Intergovernmental Agreement" means the joint exercise of powers authorized by Title 11, Chapter 7, Article 3 of Arizona Revised Statutes.

L. "Public Rights-of-Way and Easements" means that real property located within the unincorporated areas of Mohave County within which the Mohave County Board of Supervisors has the power and authority to grant a Franchise.

M. "Rights-of-Way and Easements" shall mean the surface of, the space above, and the space below the Public Rights-of-Way and Easements reasonably necessary to construct, operate, and maintain the Franchise Property.

N. "Service Area" means the unincorporated areas of Mohave County in which the Franchisee delivers the service for which this Franchise is granted.

O. "Subscriber or User" means any person or entity receiving, for any purpose, the services of the Franchisee.

Section 2. GRANTING OF FRANCHISE.

A non-exclusive Franchise is hereby granted to Franchisee for the purpose of

locating, constructing, and maintaining Franchise Property in the unincorporated area of Mohave County. This Franchise shall include the authority, privilege, and power to construct, operate, and maintain all necessary Franchise Property in, over, under, across, and upon the Public Rights-of-Way and Easements consistent with the terms and conditions of this Franchise.

Section 3. TERM OF FRANCHISE.

This Franchise shall be for an initial term of twenty-five (25) years beginning on the date of Board approval. This term may be extended only by reapplication and grant of an extension. Application for an extension shall be submitted to the Board no sooner than three hundred sixty-five (365) days, nor later than one hundred twenty (120) days, prior to the expiration date of this Franchise.

Section 4. TERMS AND CONDITIONS.

This Franchise shall be subject to the following conditions:

A. This Franchise shall not be deemed to limit the authority of the Board to include other conditions or restrictions which may be necessary for the protection of the health, safety and welfare of the residents of the County and/or for the efficient administration of the Rights-of-Way and Easements in general.

B. This Franchise is non-exclusive.

C. The Board has granted this Franchise in reliance upon the Franchisee's business skill, reputation, financial capacity, and character. Accordingly, this Franchise and/or any interest hereunder shall not be assigned, transferred, conveyed, or otherwise encumbered without the express written consent of the Board. Failure of performance by the Franchisee of any of the terms and conditions of this Franchise may be cause for termination of this Franchise pursuant to Section 16 of this Agreement.

D. No privilege or exemption shall be granted or inferred unless specifically set forth in this Franchise.

E. Any privilege claimed under this Franchise by the Franchisee in any Right of Way or Easement shall be subordinated to any prior lawful occupancy of the Right of Way or Easement.

F. Prior to commencing any activity authorized by this Franchise, the Franchisee shall submit plans and specifications for such activity to the County Public Works Director for approval; provided, however, whenever Franchisee is required to undertake emergency activities required to protect the health, safety and welfare of the public and/or the safety and reliability of the Franchise Property, Franchisee shall notify the County Public Works Director not later than twenty-four (24) hours after notice of the emergency; and provided further, however, should such emergency present an immediate threat or danger to the health, safety and welfare of the public, Franchisee

shall notify the County Manager or the County Public Works Director or the County Emergency Services Coordinator or the Chairman of the Board within one (1) hour of notice of the emergency.

G. Any failure of the Board, or its agents, to promptly enforce compliance of the terms and/or conditions of this Franchise shall not be deemed a waiver of such terms and/or conditions.

H. The Franchisee shall have no recourse against the Board or its agents for any loss, cost, expense, or damage arising out of any term, condition or enforcement of this Franchise.

I. The Franchisee shall be subject to all County rules, regulations and/or specifications pertaining to the use of Public Rights-of-Way and Easements which may be adopted from time to time by the Board.

J. Prior to the grant of this Franchise by the Board, Franchisee shall submit a projected financial statement, and annually thereafter, Franchisee shall submit to the Board a complete financial statement that reflects the current financial status of the Franchisee and a list of names and addresses of proprietors, owners, or beneficial shareholders who hold more than a ten percent (10%) interest in the corporation, organization, or regulated entity.

Section 5. RECORDS TO BE KEPT AND MAINTAINED; REPORTS; INSPECTION OF RECORDS.

A. Franchisee shall prepare and furnish to the Board, or its agents, such reports and records of its operations, affairs, transactions and/or property as the Board deems necessary or appropriate for the enforcement or performance by the Franchisee according to the terms and conditions of this Franchise.

B. Franchisee shall keep and maintain within the County, and make available for County inspection upon reasonable request, full and complete plans and records showing the exact location of all Franchise Property installed and/or in use in the Public Rights-of-Way and Easements.

C. Franchisee shall file with the County Public Works Director, on or before the 31st day of December of each year, a map and/or a set of plans showing all Franchise Property installed and/or in use in the Public Rights-of-Way and Easements current as of the immediately preceding November 30th.

D. Franchisee shall keep its Franchise property in good operating condition, and Franchisee shall cause all customer complaints to be duly investigated and, where the circumstances warrant, corrected within a reasonable period of time. Records reflecting such complaints, and the time and manner in which they are resolved, shall be maintained by the Franchisee for at least one (1) year and shall be made available for inspection by the Board or its agents upon reasonable request.

Section 6. INSTALLATION STANDARDS.

A. Franchisee shall be responsible for meeting all County, State, Federal, and local installation standards.

B. Any other provision of this Franchise notwithstanding, all installations of Franchise Property shall be made in a safe and workmanlike manner and maintained in good condition at all times. Except for the conduct of normal construction and repair activities, all such installations of Franchise Property shall be approximately placed so as not to interfere in any manner with the rights of the public or individual property owners and shall not interfere with the use of public property by the public and shall not obstruct or impede traffic. The Board reserves the right of regulation of the erection and construction of any Franchise Property, by Franchisee and its agents or employees, and to designate where such Franchise Property shall be placed. Franchisee agrees to make changes in its plans, specifications and/or Franchise Property to conform with all requirements of the Board.

C. Franchisee shall be responsible for obtaining all necessary licenses, certificates, permits and approvals from all government authorities having jurisdiction over the activities to be conducted under this Franchise.

Section 7. UNDERGROUND LINES.

Franchisee shall, at its own expense, place its lines underground in areas which it serves where telephone and electric power lines are, or are required to be, underground.

Section 8. LOCATION OF FRANCHISE PROPERTY.

Franchise Property shall be constructed or installed in Public Rights-of-Way and Easements of the County only at such locations and in such manner as shall be approved by the Board or its agents. Construction or installation of Franchise Property shall be in accordance with all Federal, State, and County laws and regulations.

Section 9. REPAIR OF ROADS, STREETS, RIGHTS-OF-WAY AND EASEMENTS.

Franchisee shall, at its own expense, promptly repair and restore any and all roads, streets, sidewalks or other public and/or private property altered, damaged, or destroyed by Franchisee in exercising the privileges granted herein to Franchisee.

Section 10. FAILURE TO PERFORM AS REQUIRED IN SECTION 9 ABOVE.

A. Upon failure of Franchisee, and its agent or employees, to complete any work required by this Franchise, the Board or its agents may notify Franchisee of non-compliance by registered mail. Franchisee shall have fourteen (14) days from the receipt of the notice to complete the repairs or to enter into an agreement with the

Board and/or its agents for the completion of the repairs.

B. If, in the opinion of the County Director of Public Works and/or the County Manager, the failure to repair or complete construction presents a serious and immediate danger to the public health, safety and welfare, they, separately or together, may take immediate action to mitigate the damage. All costs associated with such actions will be the sole responsibility of Franchisee, and Franchisee shall reimburse the County for such costs within thirty (30) days after receipt or an itemized bill.

Section 11. REMOVAL AND ABANDONMENT OF FRANCHISE PROPERTY.

A. In the event the use of any Franchise Property is discontinued for a continuous period of twelve (12) months and Franchisee is unable to reasonably demonstrate the usefulness of such Franchise Property for future use, Franchisee shall either remove such Franchise Property or abandon such Franchise Property in place.

B. In the event Franchise Property is installed in violation of any requirements of this Franchise, and Franchisee fails to take reasonable measures to cure such violation within thirty (30) days after written notice of such violation, Franchisee shall either remove such Franchise Property or abandon such Franchise Property in place.

C. Franchise Property to be abandoned in place shall be abandoned in accordance with applicable law. Upon abandonment of Franchise Property in place, Franchisee shall submit to the Board an instrument satisfactory to the Board transferring the ownership of such Franchise Property to the County.

Section 12. CHANGES REQUIRED BY PUBLIC IMPROVEMENTS.

Franchisee shall, at its own expense, protect, support, temporarily disconnect, relocate in the same street, alley or public place, any Franchise Property when required by the Board or its agents by reason of County Public improvements; provided, however, Franchisee shall have the right to abandon Franchise Property as provided in Section 11 above.

Section 13. INDEMNIFICATION OF COUNTY.

Franchisee shall defend the County against all claims for injury to any person or property caused by the negligence of Franchisee, its agents and/or employees, in the construction or operation of Franchise Property, and, in the event of a determination of liability, shall indemnify the County, the Board, its agents and/or employees. More particularly, Franchisee, its successors and assigns, does hereby agree to indemnify and hold harmless the County, the Board and/or its agents and employees, from any and all liability, claim, demand or judgment arising out of any injury to any person or property as a result of a violation of failure on the part of Franchisee, its successors and assigns, to observe their proper duty or because of negligence in whole or in part arising out of the construction, repair, extension, maintenance, or operation of Franchise

Property of any kind or character used in connection with this Franchise.

Section 14. LIABILITY INSURANCE REQUIRED.

Franchisee agrees that prior to commencing construction, and at all times thereafter, during the existence of this Franchise, Franchisee will carry a minimum of $1,000,000 in excess liability insurance on a combined single limit basis above any permitted self-insured retention. Self-insured retention shall be permitted so long as Franchisee continues to report to the Securities and Exchange Commission of the United States a Total Assets amount in excess of $100,000,000. The insurance coverage required by this Section shall be provided by one or more insurers permitted under Title 20 of Arizona Revised Statutes to transact insurance business. Further, Franchisee shall provide to the Clerk of the Board of Mohave County a Certificate of Insurance naming the County, the Board and/or its agents and employees as additional insured. The Certificate will provide for notification to the Clerk of the Board of Mohave County prior to any change in said policy, or cancellation of said policy, for any reason, including nonpayment of premiums.

Section 15. FRANCHISE FEE.

A. Franchisee shall pay to the County an annual Franchise Fee in an amount equal to two percent (2%) of Franchisee's Gross Annual Receipts derived from the operation of Franchise Property so long as the Board shall have the authority to levy a Franchise Fee. Further, Franchisee shall not be required to pay to the County any other Franchise fee or Permit fee in connection with this Franchise. There shall be no offsets for any other taxes or assessments, *i.e.*, sales tax, fuel tax, personal property tax, general ad valorem property tax, special assessments for local improvements or any other tax or assessment not directly related to the use of the Public Rights-of-Way and Easements that may be required of Franchisee by any government agency.

B. The annual Franchise Fee shall be paid no later than the first (1st) day of May following each calendar year during the term of this Franchise. All such payments shall be made to the Mohave County Finance Department, P.O. Box 7000, Kingman, Arizona 86402-7000. So long as the Board shall have the authority to levy a Franchise Fee, failure to pay such Franchise Fee by the first (1st) day of May following the calendar year is a material breach of this Franchise Agreement and is subject to the termination provisions of Section 16 hereinafter.

C. The Board shall have the right to inspect and audit all Franchisee's books and records which may be necessary in determining Franchisee's Gross Annual Receipts derived from the use of the Public Rights-of-Way and Easements and the right of audit and re-computation of any amount paid under this Section; provided, however, that the right of re-computation shall be limited to the two (2) calendar years immediately preceding the initiation of any such audit. Financial statements required by this Franchise Agreement for each calendar year shall be submitted annually on or before April 15 of each year. No acceptance of any payment shall be construed as a

release or accord and satisfaction of any claim the County may have for further or additional sums payable under this Section or for the performance of any obligation under this Franchise Agreement.

D. The percentage of Gross Annual Receipts set forth in this Section and the insurance requirements set forth in Section 14 above shall be subject to reevaluation by the Board every fifth (5th) year of this Franchise; provided, however, that no reevaluation shall occur so long as Franchisee continues to report to the Securities and Exchange Commission of the United States a Total Assets amount in excess of $100,000,000. If reevaluation of the amounts due under this Section or the insurance requirements set forth in Section 14 above should result in a dispute between the parties, the dispute shall be presented to a neutral Arbitration Board for decision and settlement. The Arbitration Board shall consist of either one person mutually acceptable to the parties to this Franchise Agreement or to the American Arbitration Association. In the event of arbitration, the parties shall each pay their individual costs for such arbitration. The standard procedures and policies of arbitration shall apply in all cases.

Section 16. TERMINATION.

A. This Franchise Agreement and Franchise may be terminated by the mutual consent of the Board and the Franchisee evidenced by a writing.

B. This Franchise Agreement and Franchise, and all rights granted hereunder, may be terminated by the Board upon any breach of the terms and conditions hereof by Franchisee and Franchisee's failure to undertake reasonable measures to cure such breach within thirty (30) days subsequent to Franchisee's receipt of written notice of such breach. Written notice shall be by registered mail.

Section 17. OTHER PROVISIONS.

Franchisee shall keep a copy of its current Tariffs applicable to the Subscribers or Users in Mohave County on file with the Clerk of the Board of Mohave County.

Section 18. RESERVATION OF POWERS.

A. There is hereby reserved to the Board every right and power which is required to be reserved and Franchisee, by its acceptance of this Franchise, agrees to be bound thereby and to comply with any action or requirements of the Board in its exercise of any such right of power enacted or established.

B. Neither the granting of this Franchise nor any of the provisions contained herein shall be construed to prevent the Board from granting any identical, or similar, Franchise to any person or corporation other than the Franchisee.

Section 19. SEVERABILITY.

In the event any provision of this Agreement is rendered inoperative by virtue of

the entry of a final judgment of a Court of competent jurisdiction, such event shall not affect any other provision of this Agreement that can be given effect without such inoperative provision and, for this purpose, the provisions of this Agreement are hereby declared to be severable.

Section 20. OFFICIAL NOTICES.

Notices concerning this Franchise Agreement and Franchise shall be sent to:

FOR THE COUNTY:	FOR FRANCHISEE:
Clerk of the Board Mohave County P.O. Box 7000 Kingman, AZ 86402-7000	President Perkins Mountain Utility Company 2214 Hualapai Mountain Road Suite H Kingman, AZ 86401

Section 21. EFFECTIVE DATE.

This Franchise shall take effect upon the date of approval by the Board.

APPROVED by the Mohave County Board of Supervisors this 6 day of March, 2006.

FOR THE BOARD:	ACCEPTED FOR FRANCHISEE:
Chairman of the Board	President

APPROVED AS TO FORM:	ATTEST:
County Attorney	Clerk of the Board

BOARD OF SUPERVISORS MOHAVE CO. DITAT DEUS ARIZONA

ATTACHMENT "A"
Legal Description

TOWNSHIP 20 NORTH, RANGE 18 WEST, G.& S.R.M., MOJAVE COUNTY, AZ:

SECTION 2, EXCEPT THE W2 NW4 NW4 NE4 NE4, & THE SE4 SE4;
SECTION 3;
SECTION 4;
SECTION 8, EXCEPT THE W2 NW4 NW4 NE4;
SECTION 9;
SECTION 10;
SECTION 11, EXCEPT THE S2 SE4 SE4 SE4;
SECTION 14, EXCEPT THE E2 NE4, THE NE4 SE4, THE E2 W2 SE4 SE4, & THE E2 SE4 SE4;
SECTION 16.

TOWNSHIP 21 NORTH, RANGE 18 WEST, G.& S.R.M., MOJAVE COUNTY, AZ:

SW4 SECTION 34.

TOWNSHIP 27 NORTH, RANGE 20 WEST, G.& S.R.M., MOHAVE COUNTY, AZ:

SECTION 16, EXCEPT THE NW4 NE4, & THE E2 NE4;
W2 W2 SECTION 17;
SECTION 20;
SECTION 21, EXCEPT THE SW4, & THE S2 SW4 NW4;
SECTION 23, EXCEPT THAT PORTION WITHIN THE BOUNDARIES OF BONITA M.S. 1253A, AS SET FORTH IN SAID PATENT.
ALL OF SECTION 30 LYING SOUTHERLY OF THE CENTERLINE OF WHITE HILLS ROAD (O.R. 274/50-97), EXCEPT THE SW4, & THE SW4 SE4.

TOWNSHIP 27 NORTH, RANGE 21 WEST, G. & S.R.M., MOHAVE COUNTY, AZ:

A PORTION OF THE E2 SECTION 25 DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF THE SOUTHEAST QUARTER (SE ¼) OF SAID SECTION 25; THENCE SOUTH 00°28'58" WEST, ALONG THE EASTERLY LINE THEREOF, 2,643.95 FEET TO THE SOUTHEAST CORNER OF SAID SOUTHEAST QUARTER (SE ¼); THENCE NORTH 89°33'42" WEST, ALONG THE SOUTHERLY LINE THEREOF, 164.23 FEET TO THE POINT OF CURVE OF A NON TANGENT CURVE TO THE LEFT, OF WHICH THE RADIUS POINT LIES SOUTH 74°14'59" WEST, A RADIAL DISTANCE OF 5,821.58 FEET, SAID POINT BEING ON THE EASTERLY RIGHT-OF WAY LINE OF U.S. HIGHWAY 95; THENCE NORTHERLY ALONG THE ARC, ALONG SAID EASTERLY RIGHT-OF-WAY LINE, THROUGH A CENTRAL ANGLE OF 07°34'58", 770.46 FEET; THENCE NORTH 23°19'59" WEST, CONTINUING ALONG SAID EASTERLY RIGHT-OF-WAY LINE, 2,685.36 FEET TO THE CENTERLINE WHITE HILLS ROAD (O.R. 274/50-97); THENCE NORTH 68°20'45" EAST, ALONG SAID CENTERLINE, 1,632.40 FEET TO THE EASTERLY LINE OF THE NORTHEAST QUARTER (NE ¼) OF SAID SECTION 25; THENCE SOUTH 00°28'34" WEST, ALONG SAID EASTERLY LINE, 1,151.09 FEET TO THE POINT OF BEGINNING.

Perkins Mountain Utility Company SW-20379A-05-0489
Perkins Mountain Water Company W-20380A-05-0490

ORIGINAL

MOHAVE COUNTY BOARD of SUPERVISOR

57

P.O. Box 7000 700 West Beale Street Kingman, Arizona 86402-7000
Website – www.co.mohave.az.us

District 1
Pete Byers
(928) 753-0722

District 2
Tom Sockwell
(928) 758-0713

District 3
Buster D. Johnson
(928) 453-0724

County Manager
Ron Walker
Telephone (928) 753-0729
FAX (928) 718-4957

Clerk of the Board
Barbara Bracken
Telephone (928) 753-0731
FAX (928) 753-0732

2006 OCT -4 A 11:34
AZ CORP COMMISSION
DOCUMENT CONTROL
Arizona Corporation Commission
DOCKETED
OCT -4 2006
DOCKETED BY
nr

Revised 09-28-2006

AGENDA
NOTICE OF REGULAR MEETING AND PUBLIC HEARINGS OF THE MOHAVE COUNTY BOARD OF SUPERVISORS
OCTOBER 2, 2006
700 W. BEALE STREET - KINGMAN, ARIZONA

Pete Byers, Chairman Tom Sockwell, Vice-Chairman Buster D. Johnson, Supervisor

If members of the public wish to address the Board regarding an item they may fill out the Request to Speak Form (indicate item number) located in the back of the room. The form should then be given to the Clerk of the Board prior to the meeting. The time limit rule, noted on the form, will be enforced.

MEMBERS OF THE MOHAVE COUNTY BOARD OF SUPERVISORS WILL ATTEND EITHER IN PERSON OR BY TELEPHONE CONFERENCE CALL

9:00 A.M. EXECUTIVE SESSION FOR DISCUSSION AND CONSULTATION WITH LEGAL COUNSEL IN ACCORDANCE WITH A.R.S. 38-431.03 (A) (3) & (4) TO DISCUSS ITEMS NOTICED ON THE AGENDA WITH AN ASTERISK.

9:30 A.M. MEETING CALLED TO ORDER WITH INVOCATION AND PLEDGE OF ALLEGIANCE.

MOTION AND ACTION TO CALL FOR AN EXECUTIVE SESSION TO BE HELD NOVEMBER 6, 2006, AT 9:00 A.M. FOR DISCUSSION AND CONSULTATION WITH LEGAL COUNSEL IN ACCORDANCE WITH A.R.S. 38-431.03 (A) (3) & (4) TO DISCUSS ITEMS NOTICED ON THE AGENDA WITH AN ASTERISK.

THE BOARD OF SUPERVISORS MAY, BY MOTION, RECESS INTO EXECUTIVE SESSION TO RECEIVE LEGAL ADVICE FROM THE BOARD'S ATTORNEY(S) ON ANY ITEM CONTAINED IN THIS AGENDA PURSUANT TO A.R.S. 38-431.03 (A) (3).

OFFICIAL BUSINESS TO COME BEFORE THE BOARD:

*1. Discussion of pending or contemplated litigation, claims and demands.
2. Committee and/or Legislative Reports.
3. County Manager's Report – Presentation on the County's new economic development opportunities created by HB2236. Greg Swartz, Piper Jaffray and Robert Casillas, Stone & Youngberg will discuss the revised Community Facilities District statutes and how Mohave County can take advantage of CFDs to encourage well-planned development.
4. Approval of August 21 and September 5, 2006, BOS Meeting Minutes.

PRESENTATION OF
THE 11TH ANNUAL ACHIEVEMENT OF EXCELLENCE IN PROCUREMENT AWARD
BY THE MOHAVE COUNTY DEPARTMENT OF PROCUREMENT
TO THE MOHAVE COUNTY BOARD OF SUPERVISORS

A-9
admitted

Acre Minimum Lot Size) zone, in the Golden Valley Area (south of State Highway 68 and west of Teddy Roosevelt Road), Mohave County, Arizona. **(COMMISSION DENIED BY 4 – 4 VOTE)**

49. **Open Public Hearing:** Discussion and possible action RE: Adoption of BOS Resolution No. 2006-562 – **DENYING** a **REZONE** of Parcel 109-H, as shown on Record of Survey Book 7, Page 26, in Section 13, Township 21 North, Range 18 West, from A-R/2A (Agricultural-Residential/Two Acre Minimum Lot Size) zone to A-R (Agricultural-Residential/One Acre Minimum Lot Size) zone, in the Golden Valley Area (south of State Highway 68 between Tooman Road and Bowie Road), Mohave County, Arizona. **(COMMISSION DENIED BY 5 - 3 VOTE)**

50. **Open Public Hearing:** Discussion and possible action RE: Adoption of BOS Resolution No. 2006-567 - **RESCISSION OF BOS RESOLUTION NO 2005-669** setting forth a Rezone of Parcel 3597, STAGECOACH TRAILS AT SANTA FE RANCH, Unit 23, in Section 11, Township 16 North, Range 16 West, from A-R/36A (Agricultural-Residential/Thirty-six Acre Minimum Lot Size) zone to A-R/8A (Agricultural-Residential/Eight Acre Minimum Lot Size) zone, in the Dutch Flat Portion of the Mohave County General Area (southwest corner of Prickly Pear Drive and Via De Ventura Road), Mohave County, Arizona. **(COMMISSION APPROVED BY UNANIMOUS VOTE)**

51. **Open Public Hearing:** Discussion and possible action RE: Adoption of BOS Resolution No. 2006-569 – **DENYING** a **REZONE** of Parcel 3529, STAGECOACH TRAILS AT SANTA FE RANCH, Unit 22, in Section 34, Township 16 1/2 North, Range 17 West, from A-R/36A (Agricultural-Residential/Thirty-six Acre Minimum Lot Size) zone to A-R/8A (Agricultural-Residential/Eight Acre Minimum Lot Size) zone, in the Dutch Flat portion of the Mohave County General Area (southwest of Alamo Road between Pearl Hart Road and Roy Rogers Road), Mohave County, Arizona. **(COMMISSION DENIED BY UNANIMOUSVOTE)**

52. **Open Public Hearing:** Discussion and possible action RE: Adoption of BOS Resolution No. 2006-532 - **DENYING** a **REZONE** of Parcel 6-20, MOUNTAIN MEADOW ESTATES, Unit 2, in Section 6, Township 24 North, Range 16 West, from A-R/36A (Agricultural-Residential/Thirty-six Acre Minimum Lot Size) zone to A-R/8A (Agricultural-Residential/Eight Acre Minimum Lot Size) zone, in the Mohave County General Area (east of Stockton Hill Road and south of Velvet Rose Road), Mohave County, Arizona, **as continued from the 09/05/2006 BOS Meeting. (COMMISSION DENIED BY 7 – 1 VOTE)**

53. **Open Public Hearing:** Discussion and possible action RE: Adoption of BOS Resolution No. 2006-514 - **DENYING** a **REZONE** of Parcel 4, as shown on Parcel Plats Book 25, Page 27, in the SW 1/4 NE 1/4 of Section 9, Township 13 North, Range 19 West, from A-R/6A (Agricultural-Residential/Six Acre Minimum Lot Size) zone to A-R (Agricultural-Residential/One Acre Minimum Lot Size) zone, in the Lake Havasu City Area (northeast corner of Window Rock Road and Page Springs Road), Mohave County, Arizona, **as continued from the 09/05/2006 BOS Meeting. (COMMISSION DENIED BY UNANIMOUS VOTE)**

OTHER MATTERS

54. **Open Public Hearing:** Discussion and possible action RE: Adoption of BOS Resolution No. 2006-317 - Consideration of a policy regarding standards of evaluation for proposed minor land division applications, in the unincorporated areas of Mohave County, Arizona. **(COMMISSION APPROVED BY 6 - 2 VOTE)**

55. **Open Public Hearing:** Discussion and possible action RE: Adoption of BOS Resolution 2006-574 - Amendment to the Mohave County Areawide Water Quality Management Plan (208 Plan) by adding the Golden Valley South Area Plan Area as a service area to be served by one interim waste water treatment plant initially and one permanent waste water treatment plant for Rhodes Homes Development.

RESOLUTION NO. 2006-574

A RESOLUTION SET FORTH BY THE MOHAVE COUNTY BOARD OF SUPERVISORS ADOPTING AN AMENDMENT TO THE MOHAVE COUNTY AREAWIDE WATER QUALITY MANAGEMENT PLAN (208 PLAN) BY ADDING THE GOLDEN VALLEY SOUTH AREA PLAN AREA AS A SERVICE AREA TO BE SERVED BY ONE INTERIM WASTEWATER TREATEMENT PLANT INITIALLY AND ONE PERMENANT WASTEWATER TREATMENT PLANT FOR RHODES HOMES DEVELOPMENT

WHEREAS, on May 24, 2000, Governor Jane Hull designated Mohave County as the Designated Planning Agency for the entire geographic area of Mohave County, except the tribal reservations, and

WHEREAS, Mohave County approved the Areawide Water Quality Management Plan December 15, 2003 via Resolution 2003-407, and

WHEREAS, Bullhead City, Colorado City, City of Kingman, and Lake Havasu City approved the Areawide Water Quality Management Plan as stated in the Intergovernmental Agreement signed and approved by all parties, and

WHEREAS, Rhodes Homes applied for a plan amendment to serve the area included in the Golden Valley South Area Plan, and

WHEREAS, two waste water treatment plants are proposed: an interim plant near the center of the development initially, and a permanent plant along the south boundary of the service area, and

WHEREAS, the Technical Advisory Committee acting for the Areawide Water Quality Planning Steering Committee held a public hearing on August 31, 2006 after a forty-five day notification period in which the Steering Committee accepted written comment, and

WHEREAS, there were no comments submitted to the Technical Advisory Committee or the Areawide Water Quality Planning Steering Committee, and

WHEREAS, the Mohave County Areawide Water Quality Planning Steering Committee reviewed the plan and recommends its adoption, and

WHEREAS, City of Kingman, is scheduled to consider the approval of the amendment to the Areawide Water Quality Management Plan as stated in the Intergovernmental Agreement signed and approved by all parties.

10/03/2006 14:51 928/530/32 CLERK OF THE BOARD

NOW THEREFORE BE IT RESOLVED, by the Mohave County Board of Supervisors that at their meeting on October 2, 2006, the Board approves the amendment to the Mohave County Areawide Water Quality Management Plan.

MOHAVE COUNTY BOARD OF SUPERVISORS

Pete Byers

Pete Byers, Chairman

ATTEST:

Barbara Bracken

Barbara Bracken, Clerk

BOARD OF SUPERVISORS MOHAVE CO. ARIZONA

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALTY

Certificate of Approval to Construct for a Water Distribution System

Applicant Information		ADEQ File Number	20060272 Place ID#: 113602	LTF No. 39587
Name	Rhodes Homes Arizona	Project Name	Golden Valley Ranch Offsite Water Transmission Line	
Mail Address 1	2215 Hualapai Mountain Road, Suite H			
Mail Address 2		Project Location	Golden Valley, AZ	
City / State / Zip	Kingman, AZ 86409			

Project Type				Project Description
☒	Pressure Main	☐	Storage Tank	Install approximately 23292 linear feet of 24" diameter DIP waterline, 3 - 24" diameter cap with blow-off valve per MAG Std Detail 390, approximately 1389 linear feet of 12" diameter PVC waterline, 6 - 12" diameter cap with blow-off per MAG Std Detail 390, approximately 100 linear feet of 8" diameter C-900 PVC waterline, 2 – 8" diameter cap with blow-off per MAG Std. Detail 390, approximately 360 linear feet of 6" diameter C-900 PVC waterline, 6 – 6" diameter cap with blow-off per MAG Std Detail 390 and related appurtenances to deliver water to and from the Reservoir 2750-N-1 to the GVR Development.
☐	Hydro Tank	☐	Other	

Facility Name	Stanley Consultants, Inc	Facility Capacity	
Street Address 1	5820 S. Eastern Avenue		
Street Address 2			
City / State / Zip	Las Vegas, NV 89119		

PWSID	To Be Assigned	Facility Capacity Affirmation By	Date
County	Mohave		

Design Documents Approved	Date	Site Information				
Application Date	02/28/2006	Location of Distribution System				
Site Plan	02/27/2006	Township	21 N		Range	18 W
Drawings and Specifications	02/27/2006	Section	34	Quarter Section	SE	
Operations & Maintenance Plan	03/22/2006	Latitude	35° 10' 15.2"			North
Response Letter		Longitude	114° 10' 59.0"			West
Other						

Approval to Construct (ATC) the above-described facilities as represented in approved plans documents on file with the Arizona Department of Environmental Quality is hereby given subject to the following provisions:
The General Provision and Special Provision of the Water Distribution System appear on Pages 2 through 2

CERTIFICATE DISTRIBUTION
Original Certificate
Rhodes Homes Arizona
2215 Hualapai Mountain Road
Kingman, AZ 86409

Certificate Copy Only
ADEQ/NRO Reading File
ADEQ/NRO Construction File
Mohave County
Mr. Denis Atwood, P.E.
Stanley Consultants, Inc.
5820 S. Eastern Avenue, Suite 200
Las Vegas, NV 89119

Stephen Owens, Director
Arizona Department of Environmental Quality

By [signature] 3-30-06
Kurt J. Harris, P.E., Manager — Date Approved
Water Quality Design Review Unit
Northern Regional Office

A-10
admitted

PROJECT: Golden Valley Ranch Offsite Water Transmission Line CF#: 20060272

General Provisions

1. Notice shall be given to the Northern Regional Office (NRO) in Flagstaff (1 (877) 602-3675) and to the appropriate county department when construction of the project begins to allow for inspection during construction per A.R.S § 49-104(B)(10) Contact Andy Wilson at (928) 773-2708 at least seven days prior to the start of construction.

2. The project owner shall contact a professional engineer as soon as possible to provide detailed construction inspection of this project (A.A.C. R18-5-507) Upon completion of construction the retained professional engineer shall send to NRO the following:
   a. Engineers Certificate of Completions (attached).
   b. Sealed and signed As-Built plans with construction specifications.
   c. All Construction test data certified by the engineer.
   d. All construction test data; the certified number of an operator, who is certified by the Department at a grade appropriate for the facility, is employed to operate the potable water distribution system After receipt of the items outlined above, NRO will review the file and, if in order, will issue an Approval of Construction (AOC).

3. Operation of a newly constructed facility shall not begin until an AOC is issued by the Department per A.A.C. R 185-507(A).

4. A minimum pressure of 20 psi shall be provided at all points in the distribution lines at all times

5. All materials and products that come into contact with drinking water or drinking water treatment chemicals must comply with NSF Standard 61. Any "or equal" substation shall also meet NSF Standard 61 may be considered if they otherwise comply with A.R.S. § 49-353.01.

6. Backflow prevention shall be provided in accordance with A.A.C. R 18-4-115 and / or local ordinances

7. The open end of each air relief pipe from automatic valves shall extend at least one foot above grade and shall incorporate pipe elbows to cause the opening, permanently covered with #16 mesh screen, to face downward.

8. The certificate voids and supersedes all previous "Approval to Construct" issued previously for this file number

9. Water line sewer line separation shall meet A.A.C. R 18-5-502. The separation requirements of A.A.C. R 18-5-502 shall extend to all water line services and sewer line services within the right-of-way. Separation of water and sewer line on an individual private property shall meet the requirements of the Uniform Plumbing Code (UPC)

10. This Approval to Construct will become void if an extension of time is not granted by the Department within 90 days after passage of one of the following (A.A.C. R18-5-505(E)):
    a. Construction does not begin within one year after the date the Approval to Construct is issued, or
    b. There is a halt in construction of more than one year, or
    c. Construction is not completed within three years after the date construction begins

11. Construction material used in public water systems, including residential and non-residential facilities connected to the public water system, shall be lead free as defined by A.A.C. R 18-4-101(46)

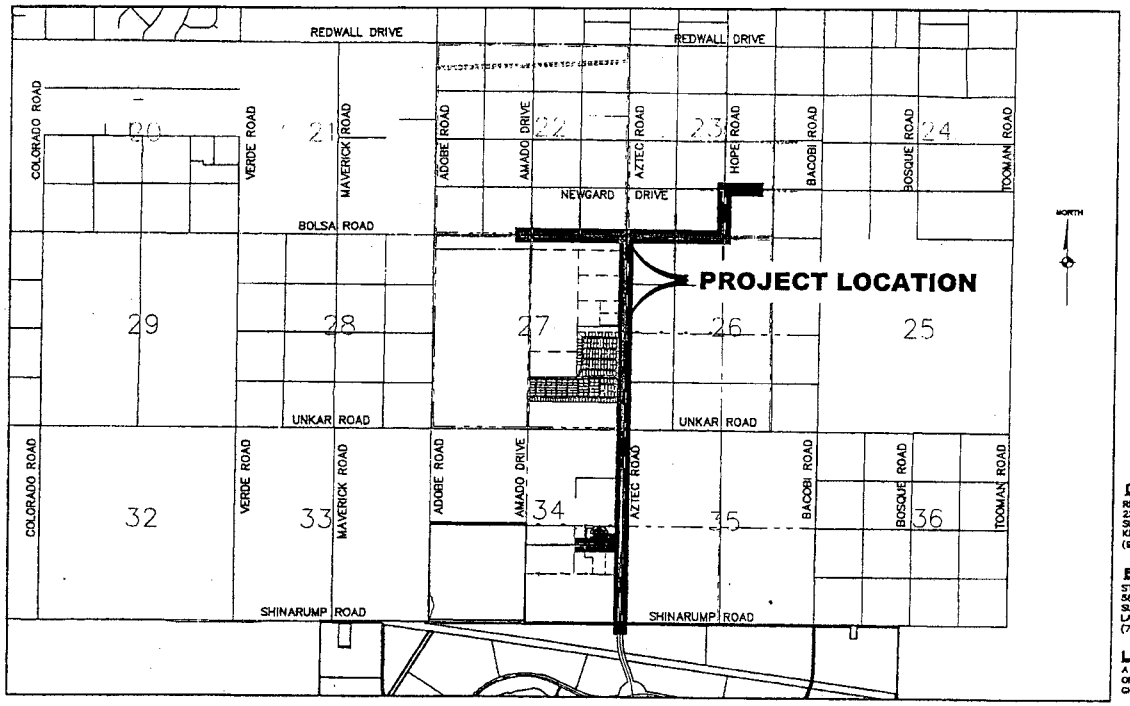
Special Provisions

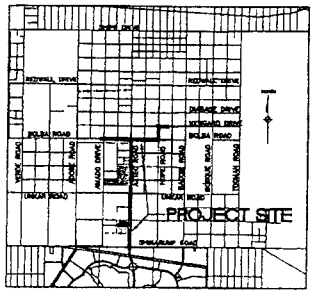
This "Approval to Construct for a Water Transmission Main" is contingent upon the approval of the "New Well and Source", Elementary Business Plan of the Perkins Mountain Water System. The Perkins Mountain Water System is to bear the risk of constructing a Public Water System that cannot be operated until all of the appropriate approvals have been obtained.

End of Provisions

3-30-06

OFFSITE WATER TRANSMISSION LINE - IMPROVEMENT FOR GOLDEN VALLEY RANCH, RHODES HOMES ARIZONA, LLC





VICINITY MAP

APPROVED FOR CONSTRUCTION
MAR 3 0 2006
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

SHEET INDEX

COVER	COVER SHEET	1 OF 31
G-1	GENERAL NOTES AND ABBREVIATIONS	2 OF 31
PP-1 TO PP-11	AZTEC ROAD PLAN AND PROFILE	3 TO 13 OF 31
PP-12 TO PP-13	DORA DRIVE PLAN AND PROFILE	14 TO 15 OF 31
PP-14 TO PP-19	BOLSA ROAD PLAN AND PROFILE	16 TO 21 OF 31
PP-20 TO PP-21	HOPE ROAD PLAN AND PROFILE	22 TO 23 OF 31
PP-22 TO PP-23	NEWGARD DRIVE PLAN AND PROFILE	24 TO 25 OF 31
DT-1 TO DT-6	DETAIL SHEETS	26 TO 31 OF 31

UTILITIES

SEWAGE DISPOSAL:	(TO BE DETERMINED)		
WATER:	(TO BE DETERMINED)		
ELECTRICITY:	UNISOURCE ENERGY	2498 AIRWAY AVENUE	(928) 681-4129
TELEPHONE:	FRONTIER COMM.	2202 STOCKTON HILL	(928) 753-3000
GAS:	UNISOURCE ENERGY	2498 AIRWAY AVENUE	(928) 681-4129
SOLID WASTE COLLECT:	WASTE MANAGEMENT	3250 GATLIN DRIVE	(928) 718-4900
SOLID WASTE DISPOSAL:	MOHAVE COUNTY	201 N. 4TH STREET	(928) 753-0723
FIRE PROTECTION:	GOLDEN VALLEY DIST.	3327 N. MAYER RD.	(928) 565-3478

NOT FOR CONSTRUCTION

PRELIMINARY

DEVELOPER

RHODES HOMES ARIZONA LLC
2215 HUALAPAI MTN. RD.
SUITE H
KINGMAN, ARIZONA 86401
(928) 718-2210

ENGINEER / SURVEYOR

STANLEY CONSULTANTS, INC.
5620 S. EASTERN AVENUE
SUITE 200
LAS VEGAS, NEVADA 89119
(702) 369-9398

LEGAL DESCRIPTION

A DIVISION OF THE NORTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 34, TOWNSHIP 21 NORTH, RANGE 18 WEST, GILA AND SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA

BASIS OF BEARINGS

NORTH 00°12'47" EAST – THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 27, TOWNSHIP 21 NORTH, RANGE 18 WEST, GILA & SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (AZ83-WF), WEST ZONE, INTERNATIONAL FOOT, UTILIZING FAST STATIC OBSERVATIONS PROCESSED BY NGS-OPUS.

M.C.S.D. "SD 32" = LATITUDE 35°09'22.70034"N.
LONGITUDE 114°06'21.57240"W (NAD '83)
HEIGHT 2562.403911ft (NAVD'88)

M.C.S.D. "SD 35" = LATITUDE 35°09'22.43032"N.
LONGITUDE 114°10'58.66309"W (NAD '83)
HEIGHT 2466.56824ft (NAVD'88)

SEC COR 26/35/34/27 = LATITUDE 35°10'15.19764"N,
LONGITUDE 114°10'59.03545"W (NAD '83)
HEIGHT 2505.655338ft (NAVD'88)

BENCHMARK

BENCHMARK @ "AZT 5" M.C.S.D.
ELEVATION= 2662.014ft (NAVD '88)

DESCRIPTION: 1 1/2" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 1999 "RLS 10343", LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

Stanley Consultants INC.
5620 S. Eastern Avenue, Suite 200
Las Vegas, Nevada 89119
(702) 369-9398 Fax (702) 369-9393
www.stanleyconsult.com

SCALE (V) N.T.S.
SCALE (H) N.T.S.
DRAWN BY EMD
CHECKED BY D.A.
DATE 11/28/05

RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH
OFFSITE WATER TRANSMISSION LINE
COVER SHEET
MOHAVE COUNTY ARIZONA

SHEET
G-1
1 OF 31 SHEETS

SC PROJECT#
18449.07.04

C:\18449\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\AZTEC-RD-EXT_IMP-COVER.dwg, 2/23/2006 1:44:12 PM, \\LVG-PS1\hp5500-survey-pcl

GENERAL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH M.A.G. STANDARD SPECIFICATIONS AND STANDARD DETAILS, AND OTHER COUNTY ADOPTED STANDARDS, UNLESS OTHERWISE
2. THE CONTRACTOR SHALL OBTAIN A RIGHT-OF-WAY USE PERMIT FOR ANY WORK TO BE PERFORMED WITHIN THE RIGHT-OF-WAY UNDER THE OWNERSHIP OR CONTROL OF MOHAVE COUNTY.
3. THIS SET OF PLANS HAS BEEN REVIEWED FOR COMPLIANCE WITH COUNTY AND STATE REQUIREMENTS PRIOR TO ISSUANCE OF CONSTRUCTION PERMITS. HOWEVER, SUCH REVIEW SHALL NOT PREVENT THE ENGINEER FROM REQUIRING CORRECTION OF ERRORS IN PLANS FOUND TO BE IN VIOLATION OF ANY LAW OR ORDINANCE.
4. IMPROVEMENTS WILL NOT BE ACCEPTED UNTIL CERTIFIED RECORD DRAWINGS (AS-BUILTS), INCLUDING ALL TEST RESULTS, HAVE BEEN SUBMITTED AND ACCEPTED BY THE ENGINEER.
5. DRAINAGE WILL REMAIN IN ITS NATURAL STATE AND WILL NOT BE ALTERED, DISTURBED, OR OBSTRUCTED OTHER THAN AS SHOWN ON THIS PLAN.
6. THE CONTRACTOR SHALL FOLLOW ALL BLUE STAKE LAWS AND NOTIFY BLUE STAKE (1-800-STAKE-IT), BEFORE DIGGING.
7. WHERE SOIL IS TO BE REMOVED FROM THE SITE, THE CONTRACTOR SHALL DESIGNATE THE LOCATION WHERE THE FILL WILL BE PLACED AND OBTAIN A LETTER FROM THE OWNER OF THAT PROPERTY ALLOWING THE PLACEMENT OF THE MATERIAL. PLACEMENT OF THIS MATERIAL SHALL BE SUBJECT TO THE APPLICABLE REQUIREMENTS AND PERMITS OF THE GOVERNING JURISDICTION.
8. ALL REQUIRED TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION.
9. EXCEPT FOR THE WORK PREFORMED UNDER THE TERMS OF A FRANCHISE, OR WORK PREFORMED BY A GOVERNMENTAL AGENCY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSURING THAT ALL WORK IS INSPECTED AND TESTED BY OR UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL ENGINEER WHO SHALL HOLD A VALID REGISTRATION IN THE STATE OF ARIZONA.

WATER

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" AND "UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION" SPONSORED AND DISTRIBUTED BY THE MARICOPA ASSOCIATION OF GOVERNMENTS (M.A.G.), IN ACCORDANCE WITH A.D.E.Q. ENGINEERING BULLETIN NO. 10, TOGETHER WITH THESE PLANS.
2. THE LOCATION OF UTILITIES SHOWN IS BASED UPON BEST INFORMATION AVAILABLE. THE LOCATIONS AS SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES AND BURIED CABLES PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION BY CALLING:
   BLUE STAKE 1-800-STAKE-IT
   AT LEAST 2 WORKING DAYS IN ADVANCE. THE CONTRACTOR SHALL COOPERATE WITH THE UTILITY COMPANIES IN PROTECTING AND WORKING AROUND THEIR UTILITIES & SERVICE LINES.
3. CONTRACTOR SHALL ACQUIRE & PAY FOR ALL NECESSARY PERMITS.
4. WATER MAIN SHALL BE PVC PIPE CLASS 150, MEETING THE REQUIREMENTS OF A.W.W.A. C-900.
   WATER SERVICE MATERIAL SHALL MEET THE REQUIREMENTS OF M.A.G. STANDARDS SPECIFICATIONS SECTION 754.
5. WATER LINES SHALL BE DISINFECTED IN ACCORDANCE WITH A.D.E.Q. ENGINEERING BULLETIN NO. 8.
6. WATER/SEWER SEPARATION SHALL MEET THE REQUIREMENTS OF R18-4-502C (LATEST REVISION). SEPARATION SHALL BE A MINIMUM OF 2' VERTICAL AND 6' HORIZONTAL.
7. TRENCHING AND BACKFILL SHALL MEET THE REQUIREMENTS OF M.A.G. STANDARD SPECIFICATION 601. COMPACTION DENSITIES SHALL BE 85% FROM THE SURFACE TO 2' BELOW SURFACE.
8. CURB STOP WITH FLUSHING PIPES SHALL BE CONSTRUCTED AS REQUIRED BY M.A.G. STANDARD DETAIL NO. 390, TYPE "A".
9. ALL FITTINGS FOR WATER MAINS SHALL MEET THE REQUIREMENTS OF M.A.G. STANDARD SECTION 752.
10. ALL THRUST BLOCKING FOR WATER LINES SHALL MEET THE REQUIREMENTS OF M.A.G. STANDARD DETAIL NO. 380.
11. ALL BLOCKING FOR WATER GATE VALVES SHALL MEET THE REQUIREMENTS OF M.A.G. STANDARD DETAIL NO. 301.
12. PAYMENT FOR CONSTRUCTION SHALL BE MADE ON THE BASIS OF UNIT PRICE BID IN THE CONTRACTORS PROPOSAL. ALL ITEMS CALLED FOR ON THE PLANS BUT NOT LISTED IN BID ITEMS SHALL BE CONSIDERED INCIDENTAL. SAID ITEMS INCLUDE BUT ARE NOT LIMITED TO: WATER LINE BLOCKING, NON-METALLIC TAPE, TESTING, SALVAGING MATERIAL, EXISTING UTILITIES CONNECTIONS, ETC.
13. ALL TAPPING SLEEVES, VALVES AND VALVE BOXES ON WATERLINES SHALL MEET THE REQUIREMENTS OF M.A.G. SPECIFICATIONS SECTION 630, AND M.A.G. STANDARD DETAIL NO. 340.
14. WATER METER COVERS SHALL MEET THE REQUIREMENTS OF M.A.G. STANDARD DETAIL NO. 310, AND WATER METER BOXES SHALL MEET THE REQUIREMENTS OF M.A.G. STANDARD DETAIL NO. 320.
15. ALL FITTINGS AND VALVES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ALL VALVES ARE TO BE PLUMB AND HAVE STRAIGHT ALIGNMENT.
16. WATER MAIN SHALL BE TESTED IN ACCORDANCE WITH M.A.G. SECTION 610-14, AND IN ACCORDANCE WITH M.A.G. SECTION 610.14 FOR DUCTILE IRON PIPE.
17. ALL EXISTING STREET PAVEMENT DISTURBED BY CONSTRUCTION SHALL BE REPLACED IN ACCORDANCE WITH M.A.G. STANDARD DETAIL NO. 200-1.
18. UTILITY FACILITIES SHOWN OR NOT SHOWN IN CONFLICT WITH THIS WORK SHALL BE RELOCATED BY THE GENERAL CONTRACTOR AS REQUIRED. THIS ACTIVITY SHALL BE COORDINATED WITH THE OWNER OF THE UTILITY TO PREVENT ANY UNNECESSARY INTERRUPTION OF SERVICE.
19. ALL WATER PIPES SHALL BE LEAD FREE PER A.A.C. R18-4-604
20. ALL MAINS SHALL BE DISINFECTED PER BULLETIN 8 AND SHALL BE WITNESSED BY A REPRESENTATIVE OF STANLEY CONSULTANTS. ALL WATER MAINS SHALL HAVE NO MORE THAN 100 PPM CHLORINE PRESENT AT TIME OF CHARGING, 24 HOURS LATER ALL WATER MAINS SHALL HAVE GREATER THAN 30 PPM OF CHLORINE PRESENT.
21. FINAL FLUSHING AND SAMPLING AND TESTING SHALL BE PERFORMED AND ACCEPTED PRIOR TO PLACING WATERLINES IN SERVICE AS PER M.A.G. STANDARD SPECIFICATIONS 611.46.
22. INSTALL M.A.G. STANDARD DETECTABLE TAPE OR PLASTIC COATED (BLUE FOR WATER AND GREEN FOR SEWER) #8 WIRE FOR ALL WATER AND SEWER LINES.
23. EACH PRODUCT ADDED DIRECTLY TO WATER DURING PRODUCTION OR TREATMENT SHALL CONFORM TO ANSI/NSF STANDARD 60.
24. A MATERIAL OR PRODUCT INSTALLED AFTER JANUARY 1, 1993, THAT COMES INTO CONTRACT WITH WATER OR A WATER TREATMENT CHEMICAL SHALL CONFORM TO ANSI/NSF STANDARD 61.

ENGINEER'S NOTES

1. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING THE COURSE OF THE CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT TO BE LIMITED TO NORMAL WORKING HOURS, AND THE CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY, AND HOLD THE DESIGN PROFESSIONAL HARMLESS FROM ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DESIGN PROFESSIONAL.
2. THE CONTRACTOR SHALL VERIFY ALL SITE CONDITIONS AND DIMENSIONS, AND SHALL NOTIFY THE ENGINEER OF ALL DISCREPANCIES PRIOR TO THE COMMENCEMENT OF WORK.
3. ADD 2300' TO ALL ELEVATIONS < 500' ON THESE DRAWINGS TO GET ACTUAL ELEVATION.
4. SEE LANDSCAPE PLANS FOR LANDSCAPING AND ONSITE IRRIGATION.

LEGEND

- FINISHED FLOOR ELEVATION
- PAD ELEVATION
- BASE FLOOD ELEVATION
- 2110 — EXISTING GRADE CONTOUR
- 3445 — MAJOR CONTOUR
- 2441 — MINOR CONTOUR
- 80.00 TC — TOP OF CURB
- 80.0 FG — FINISHED GRADE
- 80.00 FL — FLOW LINE
- 80.0 HP — HIGH POINT
- 80.00 CL — CENTER LINE GRADE
- 80.00 EOP / 80.00 EP — EDGE OF PAVEMENT
- 80.00 TBC/R — TOP BACK OF CURB BODY RADIUS
- [80.00] — FUTURE GRADE
- (80.00) — EXISTING GRADE
- HIGH POINT SWALE DIRECTION
- [10+00.00] — CULDESAC STATIONING
- SWALE
- R/W LINE
- CENTER LINE
- EXISTING EDGE OF PAVEMENT
- EDGE OF PAVEMENT
- RETAINING WALL
- PERIMETER BLOCK WALL
- EASEMENT LINE
- CURB & GUTTER
- EX. CURB & GUTTER
- GRADE BREAK
- VILLAGE BOUNDARY
- DRIVEWAY
- S/W RAMP
- TOP OF SLOPE / TOE OF SLOPE — CUT OR FILL SLOPES
- EX. STREETLIGHT
- 100 WATT LUMINAIRE
- 250 WATT LUMINAIRE
- UTILITY POLE
- EXISTING SIGNAL WITH LUMINAIRE
- STREET NAME SIGN
- MISCELLANEOUS SIGN
- 36" STOP SIGN
- SERVICE POINT
- PULL BOX
- EXISTING STREET LIGHT BOX
- 306-83-014 — PARCEL NUMBER
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- 8" PVC WATER — PVC WATER MAIN (PUBLIC)
- TEE W/VALVE
- 3/4" WATER METER W/ 1" COPPER WATER LATERAL
- 2" BLOWOFF ASSEMBLY
- GATE VALVE
- 45° 90° BEND
- CROSS
- INDIVIDUAL PRESSURE REDUCING VALVE
- 48" SANITARY SEWER MANHOLE
- 8" PVC SEWER — PVC SANITARY SEWER MAIN (PUBLIC)
- 4" SERVICE LATERAL W/4" WYE
- INDIVIDUAL SEWER BACKWATER VALVE

ABBREVIATIONS

AVE	AVENUE
BC	BACK OF CURB
BCR	BACK OF CURB RADIUS
BCL	BACK OF CURB LENGTH
BM	BENCH MARK
BVC	BEGINNING OF VERTICAL CURVE
CATV	CABLE TELEVISION
C&G	CURB AND GUTTER
CE	COMMON ELEMENT
C/L OR ℄	CENTERLINE
CFS	CUBIC FOOT PER SECOND
CMP	CORRUGATED METAL PIPE
COMM DWY	COMMERCIAL DRIVEWAY
CONC	CONCRETE
CONST	CONSTRUCTION OR CONSTRUCT
CS	CURB STATIONING
CU YD	CUBIC YARD
E	ELECTRIC
EVC	END OF VERTICAL CURVE
EP	EDGE OF PAVEMENT
EX OR EXIST	EXISTING
FDC	FIRE DEPARTMENT CONNECTION
FF	FINISH FLOOR
FG	FINISH GRADE
FL OR ℄	FLOW LINE
G	GAS
GB	GRADE BREAK
HP	HIGH POINT
INV	INVERT
L	LENGTH
MVC	MIDPOINT OF VERTICAL CURVE
M.A.G.	MARICOPA ASSOCIATION OF GOVERNMENTS
MH	MANHOLE
MIN	MINIMUM
MUTCD	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
NTS	NOT TO SCALE
PVC	POLYVINYL CHLORIDE
PRVT	PRIVATE
PC	POINT OF CURVE
PCC	POINT OF COMPOUND CURVE
PI	POINT OF INTERSECTION
PRC	POINT OF REVERSE CURVE
PSI	POUNDS PER SQUARE INCH
PVI	POINT OF VERTICAL INTERSECTION
PT	POINT OF TANGENCY
PUE	PUBLIC UTILITY EASEMENT
PAE	PEDESTRIAN ACCESS EASEMENT
RCB	REINFORCED CONCRETE BOX
R/W	RIGHT OF WAY
SD	STORM DRAIN
SL/STLT	STREET LIGHT
SS	SANITARY SEWER
STD	STANDARD
S/W OR SW	SIDEWALK
T	TELEPHONE
TC	TOP OF CURB
TBD	TO BE DETERMINED
TRANS	TRANSITION
(TYP)	TYPICAL
VC	VERTICAL CURVE
VERT	VERTICAL
VG	VALLEY GUTTER
W	WATER
WM	WATER METER
YD	YARD

NOTE:
ALL ABBREVIATIONS SHOWN ON THIS LEGEND MAY NOT APPEAR ON THIS SET OF DRAWINGS.

APPROVED FOR CONSTRUCTION
MAR 3 0 2006

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVERHEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig
1-800-782-5348

Call before you Overhead
1-928-753-5591

[redacted]

NOT FOR CONSTRUCTION
PRELIMINARY

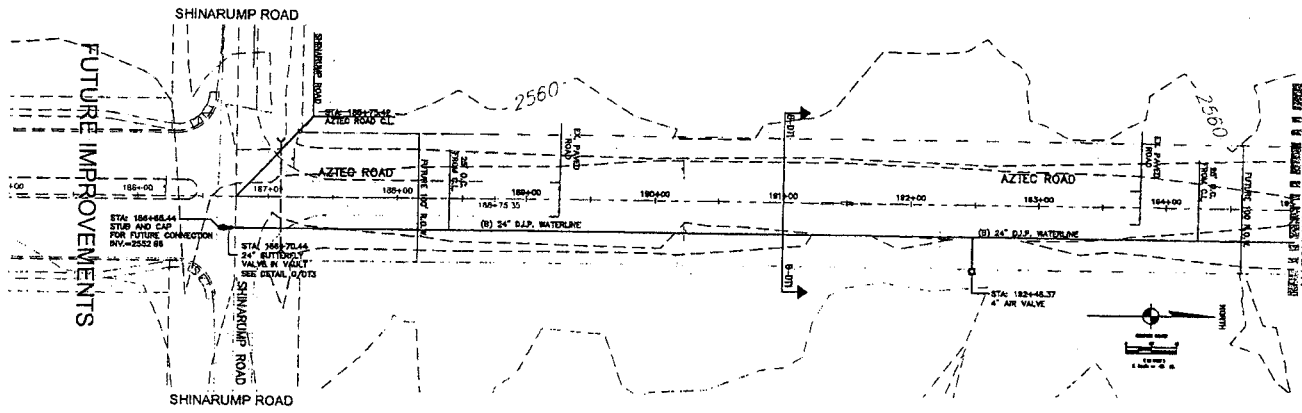
Stanley Consultants INC.
www.stanleyconsultants.com

RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH
OFFSITE WATER TRANSMISSION LINE
GENERAL NOTES AND ABBREVIATIONS
MOHAVE COUNTY ARIZONA

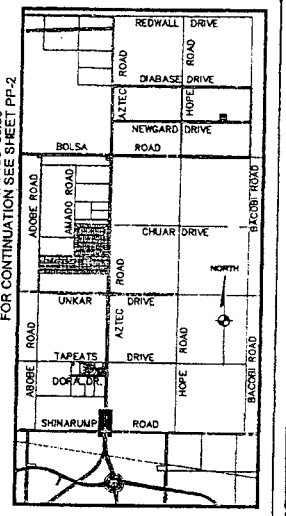
SCALE (H)	N.T.S.
SCALE (V)	N.T.S.
DRAWN BY	EMO
CHECKED BY	MPB
DATE	11/22/05

SHEET G-2
2 OF 31 SHEETS
SCI PROJECT# 18449.07.04

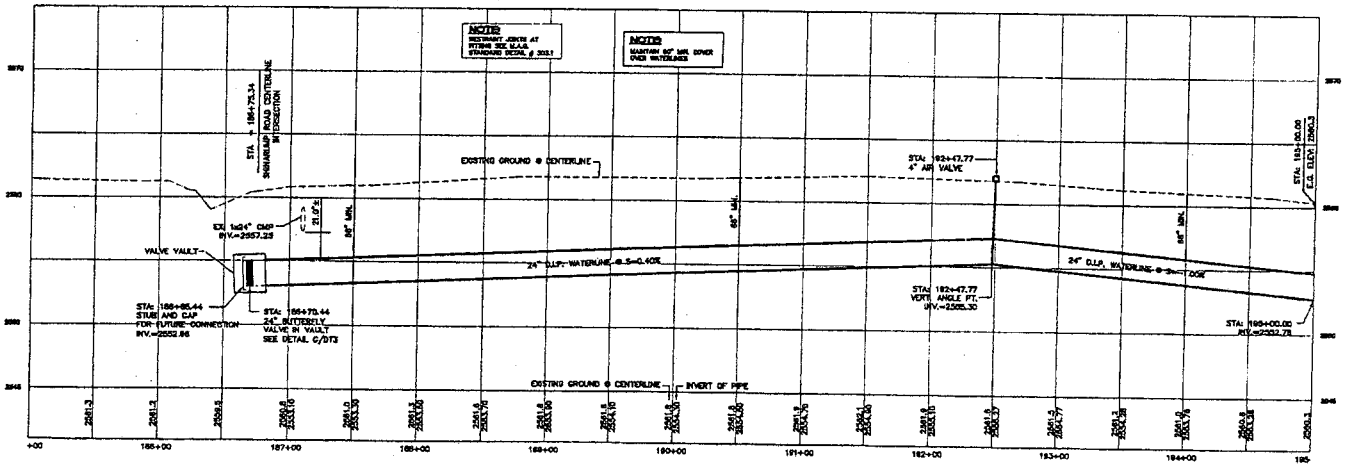
C:\18419\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\AZTEC-RD-EXT_PP1-PP6.dwg, 2/23/2006 1:48:45 PM, \\LVG-PS1\hp5500-survey-pcl



PLAN - AZTEC ROAD
SCALE: HORZ 1"=40'



KEYMAP
NOT TO SCALE



PROFILE - AZTEC ROAD
SCALE: HORZ 1"=40'
VERT 1"=4'

APPROVED FOR CONSTRUCTION
MAR 30 2006
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig
1-800-227-2600

Call before you Overhead
1-702-227-2939

BASIS OF BEARINGS

NORTH 00°12'40" EAST – THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 27, TOWNSHIP 21 NORTH, RANGE 16 WEST, G&S & SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (ACS83-WEST ZONE), INTERNATIONAL FOOT, UTILIZING FIRST STATIC OBSERVATIONS PROCESSED BY NGS-OPUS.

M.C.S.A. "30 32" = LATITUDE 35°07'32.70339"N, LONGITUDE 114°00'32.81216"W (NAD '83) HEIGHT 2588.46(NAVD'88) (NAVD'88)

M.C.S.A. "30 35" = LATITUDE 35°07'32.43025"N, LONGITUDE 114°01'06.96287"W (NAD '83) HEIGHT 2446.88(NAVD'88) (NAVD'88)

SEC COR 26/35/34/27 = LATITUDE 35°07'01.19751"N, LONGITUDE 114°01'06.05847"W (NAD '83) HEIGHT 2535.65(NAVD'88) (NAVD'88)

BENCHMARK

BENCHMARK # "AZT 5" M.C.S.A.
ELEVATION= 2535.65 (ft) (NAVD '88)

DESCRIPTION: 1 1/2" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 2000 "RLS 10247" LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE:
REFER TO M.A.G. STANDARD DWG # 302 FOR DIP JOINT RESTRAINTS

NOT FOR CONSTRUCTION
PRELIMINARY

Stanley Consultants INC.
5151 S. Emerald Drive, Suite 200
Lake Havasu City, AZ 86406
(928) 505-4300 Fax (928) 505-4301
www.stanleyconsultants.com

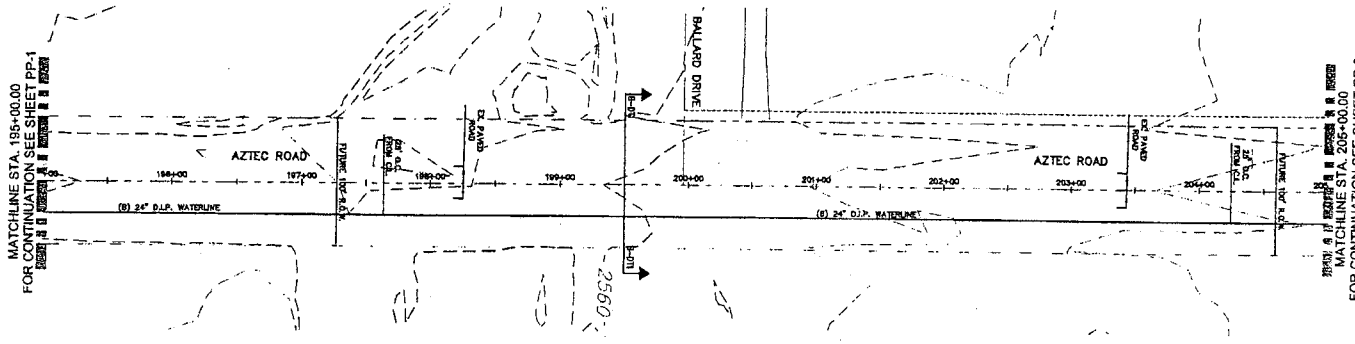
SCALE (H) 1"=40'
SCALE (V) 1"=4'
DRAWN BY DJG
CHECKED BY DLA
DATE 11/22/05

RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH
OFFSITE WATER TRANSMISSION LINE - AZTEC RD.
PLAN AND PROFILE - STA. 185+00.00 - 195+00.00
MOHAVE COUNTY ARIZONA

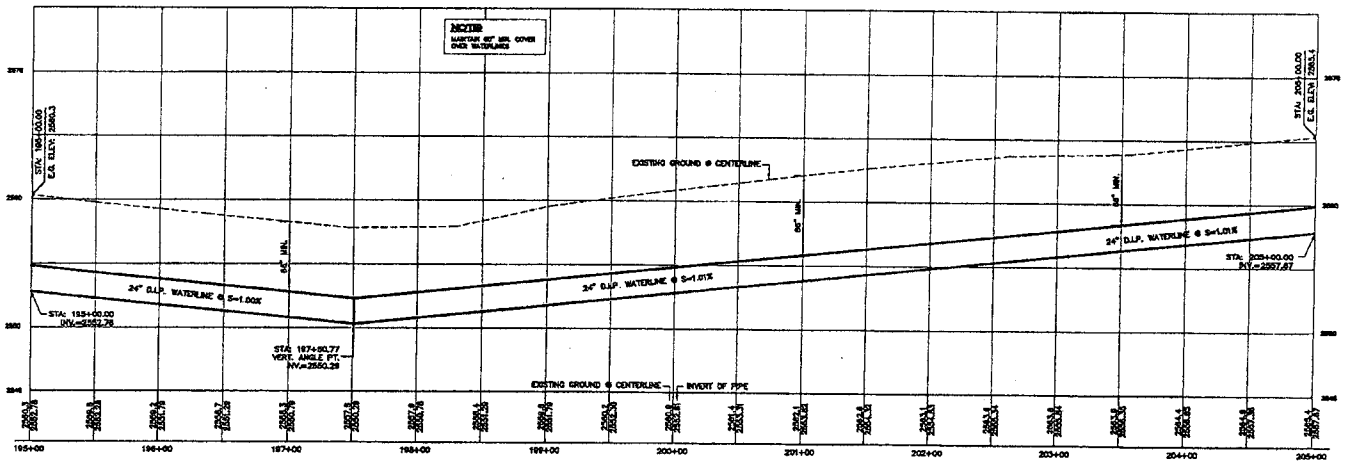
SHEET
PP-1
3 OF 31 SHEETS

SC PROJECT
18419.07.04

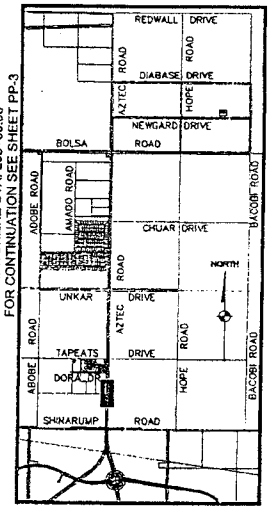
C:\19149\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\AZTEC-RD-EXT_PP1-PP6.dwg, 2/23/2006 1:49:06 PM, \\LVG-PS1\hp5500-survey-pct



PLAN - AZTEC ROAD
SCALE: HORIZ 1"=40'



PROFILE - AZTEC ROAD
SCALE: HORIZ 1"=40'



KEYMAP
NOT TO SCALE

APPROVED FOR CONSTRUCTION
MAR 30 2006
ARIZONA UNDERGROUND PROTECTION CENTER

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig 1-800-227-2600

Call before you Overhead 1-702-227-2923

BASIS OF BEARINGS

NORTH 89°12'47" EAST – THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 27, TOWNSHIP 21 NORTH, RANGE 16 WEST, GILA & SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (A2SR-NAD 83) WEST ZONE, INTERNATIONAL FOOT, UTILIZING FAST STATIC OBSERVATIONS PROCESSED BY NGS-OPUS.

M.C.S.D. "30 33" = LATITUDE 35°09'30.7900"N, LONGITUDE 114°09'30.5730"W (NAD '83) HEIGHT 2063.46(NAVD '88)

M.C.S.D. "10 35" = LATITUDE 35°09'24.4200"N, LONGITUDE 114°10'05.8630"W (NAD '83) HEIGHT 2066.86(NAVD'88)

SEC COR 26/34/34/27 = LATITUDE 35°10'18.1878"N, LONGITUDE 114°10'06.0884"W (NAD '83) HEIGHT 2005.65(NAVD'88)

BENCHMARK

BENCHMARK # "A27 B" M.C.S.D.
ELEVATION= 2066.0(NAVD '88)

DESCRIPTION: 1 1/2" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 1995 "MLS 13843" LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE:
REFER TO M.A.G. STANDARD DWG. # 302 FOR D.I.P. JOINT RESTRAINTS

NOT FOR CONSTRUCTION
PRELIMINARY

SCALE (H) 1"=40'
SCALE (V) 1"=4'
DRAWN BY DMD
CHECKED BY D.A.
DATE 11/22/05

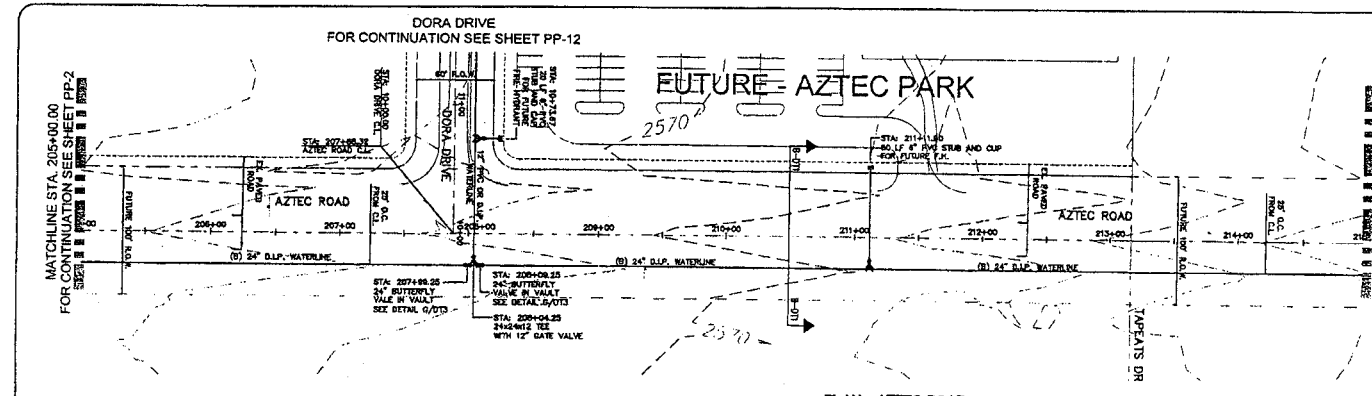
Stanley Consultants INC.
5835 S. Eastern Avenue, Suite 200
Las Vegas, Nevada 89119
(702) 361-3033 Fax (702) 361-9763

RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH

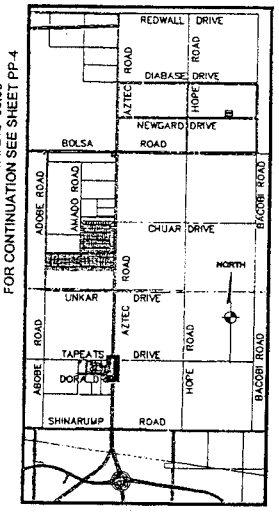
OFFSITE WATER TRANSMISSION LINE – AZTEC RD.
PLAN AND PROFILE – STA. 195+00.00 – 205+00.00
MOHAVE COUNTY ARIZONA

SHEET
PP-2
4 OF 36 SHEETS

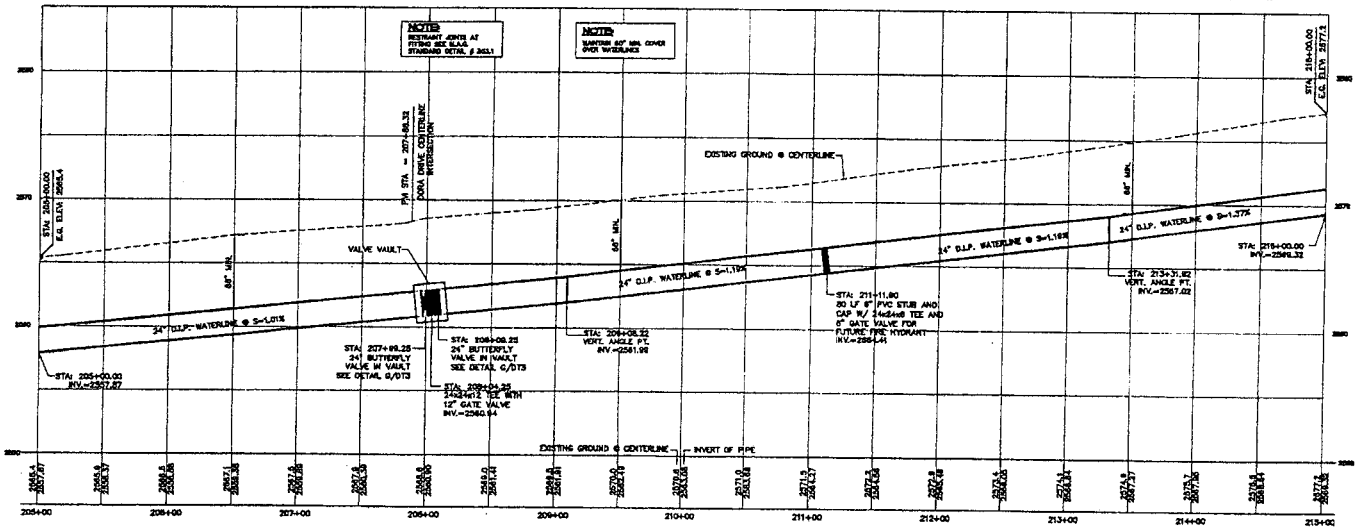
SCI PROJECT#
19149.07.04



PLAN - AZTEC ROAD
SCALE: HORIZ 1"=40'



KEYMAP
NOT TO SCALE



PROFILE - AZTEC ROAD
SCALE: HORIZ 1"=40'
VERT 1"=4'

APPROVED FOR CONSTRUCTION
MAR 3 0 2006
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig
1-800-227-2329

Call before you Overhead
1-602-227-2329

BASIS OF BEARINGS

NORTH 00°21'00" EAST – THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 27, TOWNSHIP 21 NORTH, RANGE 16 WEST, GILA & SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (ACS2-NAD83, WEST ZONE, INTERNATIONAL FOOT), UTILIZING FAST STATIC OBSERVATIONS PROCESSED BY NGS-OPUS.

M.C.S.D. "10 22" = LATITUDE 35°07'31.7025"N, LONGITUDE 114°07'31.8734"W (NAD '83) HEIGHT 2352.4439118 (NAVD'88)

M.C.S.D. "30 34" = LATITUDE 35°07'32.4330"N, LONGITUDE 114°07'56.8330"W (NAD '83) HEIGHT 2365.8460-M (NAVD'88)

SEC COR 26/25/34/27 = LATITUDE 35°07'16.1276"N, LONGITUDE 114°07'56.0884"W (NAD '83) HEIGHT 2355.4363361 (NAVD'88)

BENCHMARK

BENCHMARK # "X27 8" M.C.S.D.
ELEVATION= 2365.8-M (NAVD '88)

DESCRIPTION: 1 1/2" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 1989 "X8 1984". LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & SOLSA DRIVE.

NOTE

REFER TO M.A.G. STANDARD DWG. # 302 FOR D.I.P. JOINT RESTRAINTS

NOT FOR CONSTRUCTION

PRELIMINARY

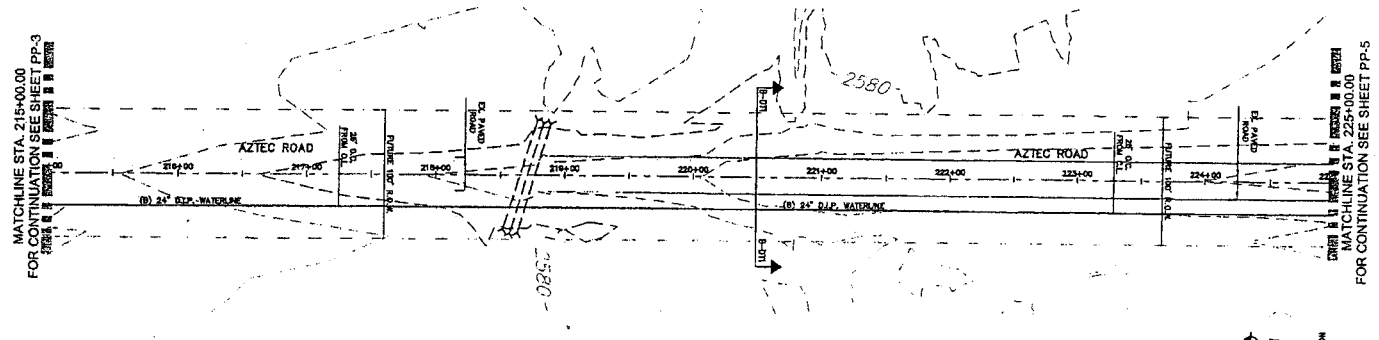
SCALE (H) 1"=40'
SCALE (V) 1"=4'
DRAWN BY DAG
CHECKED BY D.A.
DATE 11/23/05

Stanley Consultants INC.

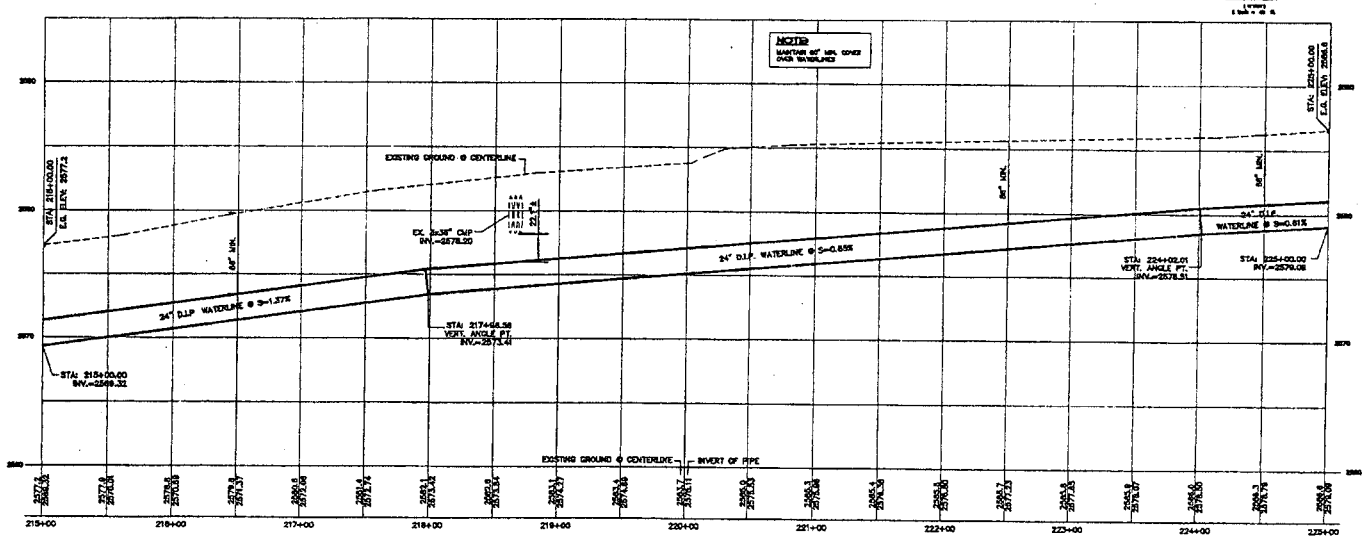
RHODES HOMES ARIZONA LLC
GOLDEN VALLEY RANCH
OPPORTE WATER TRANSMISSION LINE - AZTEC RD.
PLAN AND PROFILE - STA. 205+00.00 - 215+00.00
MOHAVE COUNTY ARIZONA

SHEET
PP-3
5 OF 31 SHEETS
SCI PROJECT#
1M4A07.04

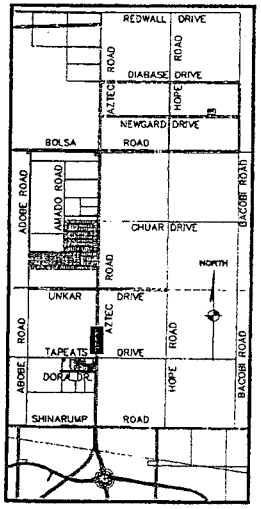
C:\2119\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\AZTEC-RD-EXT_PP1-PP6.dwg, 2/23/2006 1:49:37 PM, \\LVG-PS1\hp5500-survey-pcl



PLAN - AZTEC ROAD
SCALE: HORIZ 1"=40'



PROFILE - AZTEC ROAD
SCALE: HORIZ 1"=40'
VERT 1"=4'



KEYMAP
NOT TO SCALE

APPROVED FOR CONSTRUCTION
MAR 3 0 2006
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig 1-800-232-2500

Call before you Overhead 1-702-227-2929

BASIS OF BEARINGS

NORTH 00°13'00" EAST – THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 27, TOWNSHIP 21 NORTH, RANGE 19 WEST, G.& S. SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (A2SS-88), WEST ZONE, INTERNATIONAL FOOT, UTILIZING FAST STATIC OBSERVATIONS PROCESSED BY NGS-OPUS.

M.C.S.D. "BO 32" = LATITUDE 35°09'23.7003"N, LONGITUDE 114°09'21.5723"W (NAD '83) HEIGHT 2595.4497ft (NAVD'88)

M.C.S.D. "BO 33" = LATITUDE 35°09'22.4333"N, LONGITUDE 114°09'08.5639"W (NAD '83) HEIGHT 2595.6812ft (NAVD'88)

SEC COR 26/35/34/27 = LATITUDE 35°09'15.1678"N, LONGITUDE 114°09'08.6584"W (NAD '83) HEIGHT 2595.6812ft (NAVD'88)

BENCHMARK

BENCHMARK # "KXT 8" M.C.S.D.
ELEVATION= 2602.49ft (NAVD '88)

DESCRIPTION: 1 1/2" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 1988 "BLS TRAM", LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE:
REFER TO M.A.G. STANDARD DWG # 302 FOR D.I.P. JOINT RESTRAINTS

NOT FOR CONSTRUCTION

PRELIMINARY

SCALE (H) 1"=40'
SCALE (V) 1"=4'
DRAWN BY DKG
CHECKED BY DLA
DATE 11/22/05

Stanley Consultants INC.

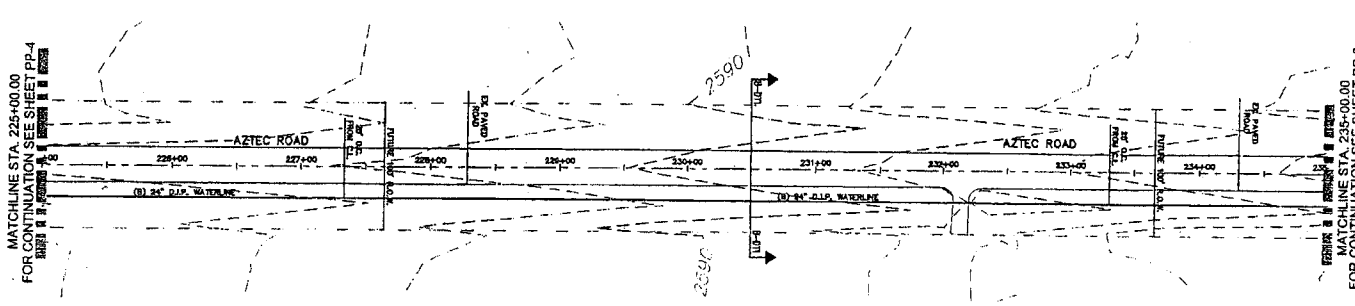
RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH

OFFSITE WATER TRANSMISSION LINE - AZTEC RD.
PLAN AND PROFILE - STA. 215+00.00 - 225+00.00
MOHAVE COUNTY ARIZONA

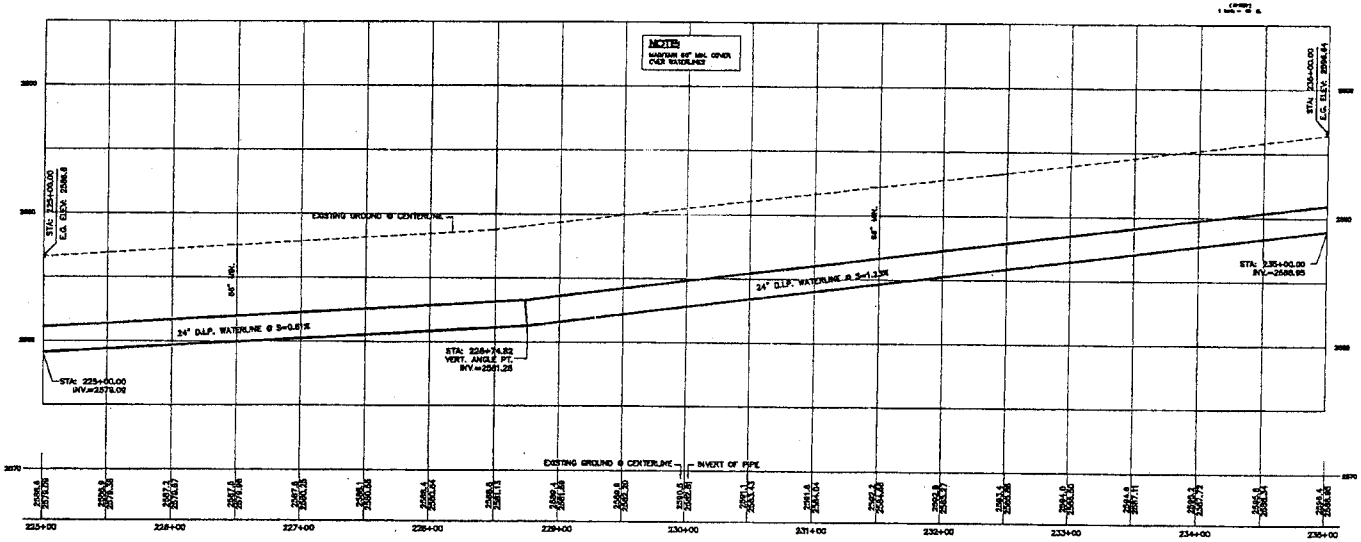
SHEET
PP-4
4 OF 26 SHEETS

EST PROJECT #
184-06.07.04

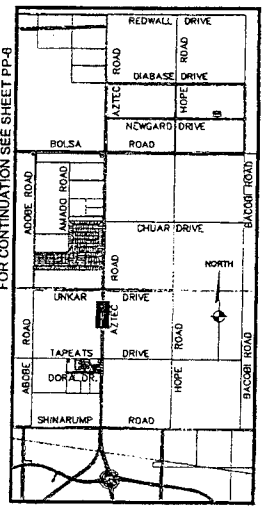
C:\184119\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\AZTEC-RD-EXT_PP1-PP6.dwg, 2/23/2006 1:50:01 PM, \\LVG-PS1\hp5500-survey-pcl



PLAN - AZTEC ROAD
SCALE: HORZ 1"=40'



PROFILE - AZTEC ROAD
SCALE: HORZ 1"=40'
VERT 1"=4'



KEYMAP
NOT TO SCALE

APPROVED FOR CONSTRUCTION
MAR 30 2006
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Avoid cutting underground utility lines. It's simple. Call before you Dig 1-800-227-2600 (Arizona Blue Stake)

Avoid overhead power line contact. Call before you Overhead 1-702-227-2929 (Nevada Power Company) (all other areas Arizona)

BASIS OF BEARINGS

NORTH 00°12'47" EAST - THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 27, TOWNSHIP 20 NORTH, RANGE 19 WEST, G.&.S. & SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (CORS-96) WITH ZONE INTERNATIONAL FOOT, UTILIZING FAST STATIC OBSERVATIONS PROCESSED BY NGS-OPUS.

M.C.S.D. "20 32" = LATITUDE 35°06'32.7020"N, LONGITUDE 114°04'21.2126"W (NAD '83) HEIGHT 2661.463919ft (NAVD'88)

M.C.S.D. "20 28" = LATITUDE 35°06'23.4333"N, LONGITUDE 114°04'56.3030"W (NAD '83) HEIGHT 2466.868249' (NAVD'88)

SEC COR 26/35/34/27 = LATITUDE 35°07'18.1979"N, LONGITUDE 114°04'56.0266"W (NAD '83) HEIGHT 2506.8363965 (NAVD'88)

BENCHMARK

BENCHMARK # 7437 6" M.C.S.D.
ELEVATION= 2662.6446 (NAVD '88)

DESCRIPTION: 1 1/2" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 1988 "MJ3 10.0/2", LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE

REFER TO M.A.C. STANDARD DWG # 302 FOR D.I.P. JOINT RESTRAINTS

NOT FOR CONSTRUCTION

PRELIMINARY

SCALE (H) 1"=40'
SCALE (V) 1"=4'
DRAWN BY DMS
DESIGNED BY D.A.
DATE 11/22/05

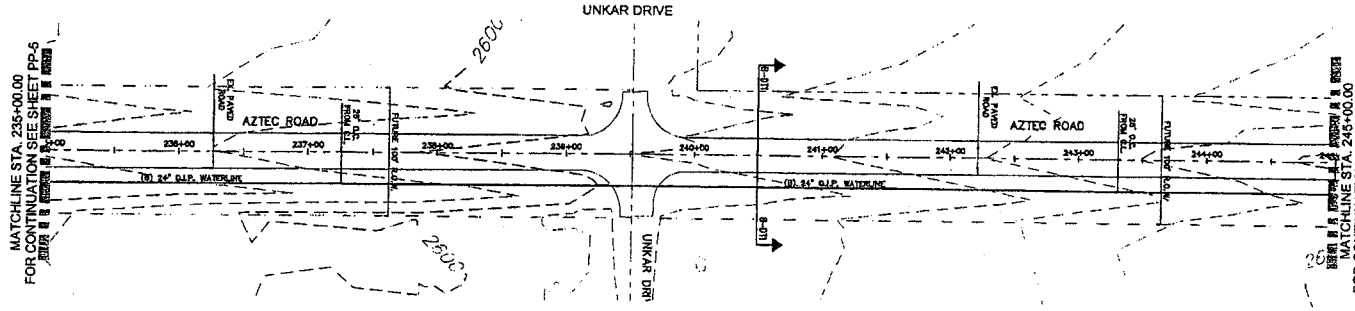
Stanley Consultants INC.
5670 S. Cedar, Lansing, MI 48911
(517) 482-2900 Fax (517) 394-7515
www.stanleyconsultants.com

RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH
OFFSITE WATER TRANSMISSION LINE - AZTEC RD.
PLAN AND PROFILE - STA. 225+00.00 - 235+00.00
MOHAVE COUNTY ARIZONA

SHEET
PP-5
7 OF 31 SHEETS

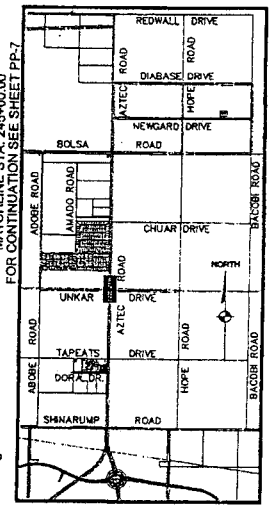
SCI PROJECT
18449.07.04

C:\JOBS\18449\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\AZTEC-RD-EXT_PP1-PP6.dwg, 2/23/2006 1:50:27 PM, \\LVG-PS1\hp5500--survey-pcl



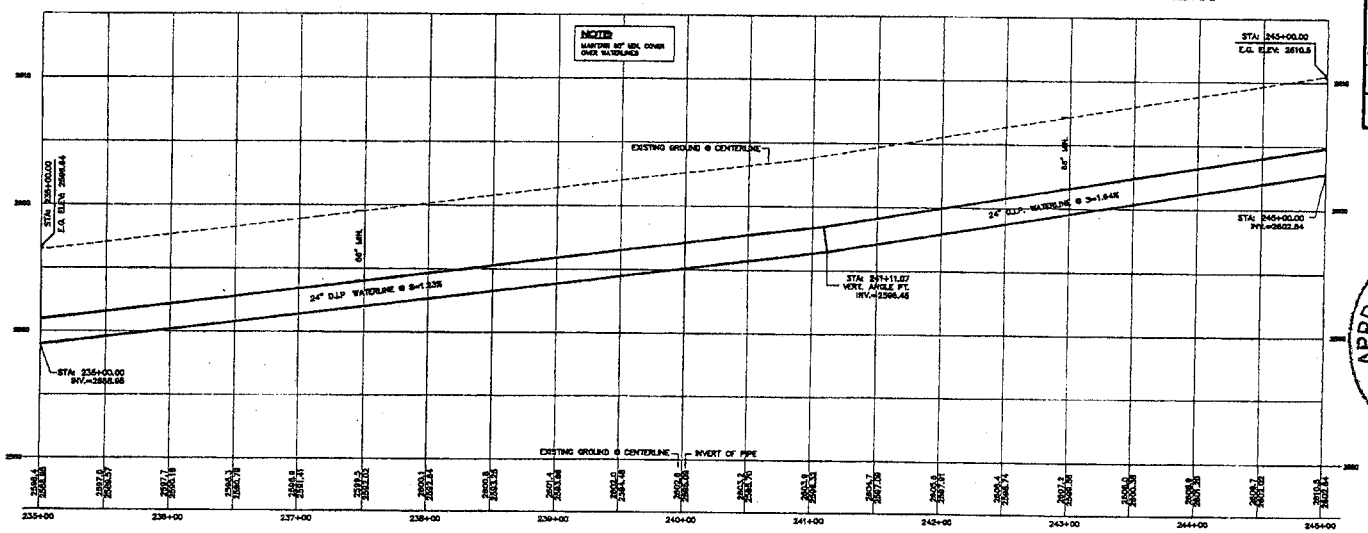
PLAN - AZTEC ROAD

SCALE: HORIZ 1"=40'



KEYMAP

NOT TO SCALE



PROFILE - AZTEC ROAD

SCALE: HORIZ 1"=40'
VERT 1"=4'

APPROVED FOR CONSTRUCTION
MAR 3 0 2006

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig
1-800-227-2600

Call before you Overhead
1-702-257-2929

BASIS OF BEARINGS

NORTH 00°18'10" EAST – THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 27, TOWNSHIP 20 NORTH, RANGE 18 WEST, GILA & SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (ACS3-NAD 83), WEST ZONE, INTERNATIONAL FOOT, UTILIZING FAST STATIC GEOREFERENCE PROCEDURES BY NGS-OPUS.

M.C.S.D. "BD 20" = LATITUDE 35°07'32.7933"N, LONGITUDE 114°08'12.8734"W (NAD '83) HEIGHT 2582.463(NGVD) (NAVD'88)

M.C.S.D. "BD 20" = LATITUDE 35°07'32.4393"N, LONGITUDE 114°07'55.8423"W (NAD '83) HEIGHT 2464.5463(NGVD) (NAVD'88)

SEC COR 26/25/34/27 = LATITUDE 35°07'13.1979"N, LONGITUDE 114°10'06.6264"W (NAD '83) HEIGHT 2585.663(NGVD) (NAVD'88)

BENCHMARK

BENCHMARK # "AZT 8" M.C.S.D.
ELEVATION= 3595.01 ft (NAVD '88)

DESCRIPTION: 1 1/2" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY MPO "AZT 8" LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE:
REFER TO M.A.G. STANDARD DWG. # 302 FOR DIP JOINT RESTRAINTS

NOT FOR CONSTRUCTION

PRELIMINARY

SCALE HZ 1"=40'
SCALE VT 1"=4'
DRAWN BY BMD
CHECKED BY GLA
DATE 11/22/05

Stanley Consultants INC.

RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH

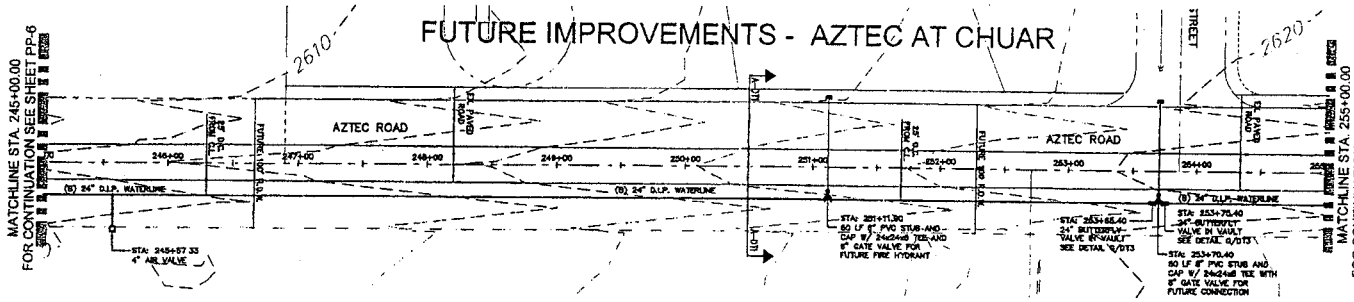
PLAN AND PROFILE - STA. 235+00.00 - 245+00.00
MOHAVE COUNTY ARIZONA

SHEET
PP-6
6 OF 31 SHEETS

SCI PROJECT #
18449.07.24

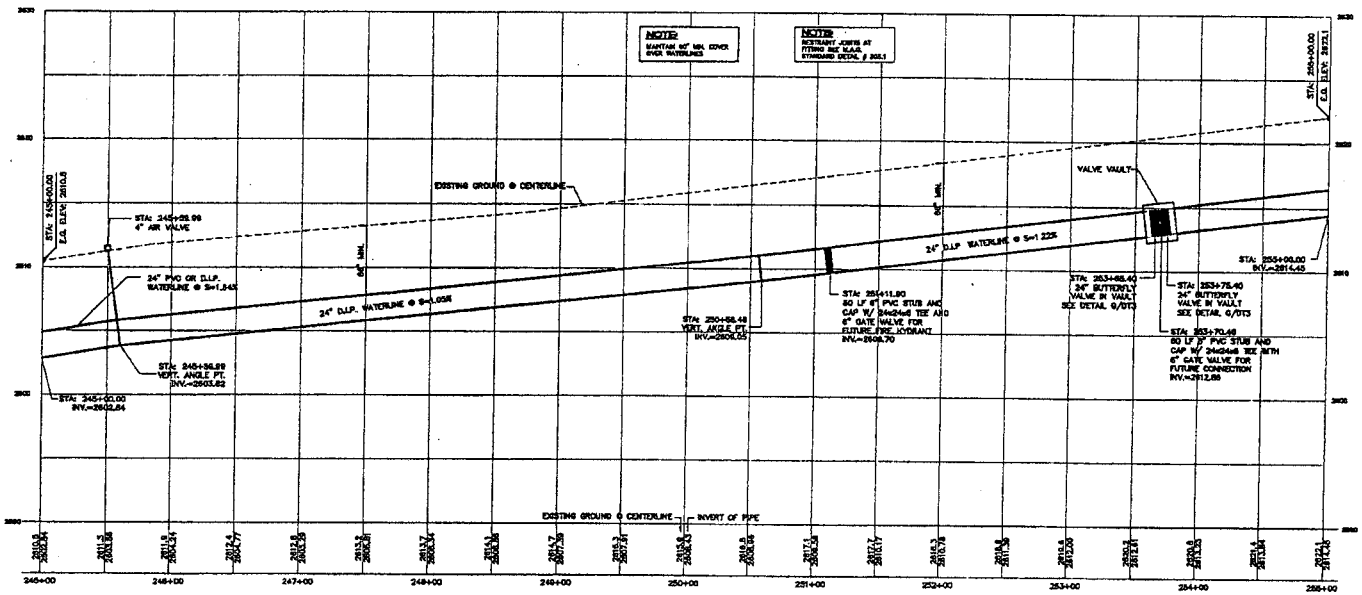
C:\18449\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\AZTEC-RD-EXT_PP1-PP6.dwg, 2/23/2006 1:50:52 PM, \\LVG-PS1\hp5500-survey-pcl

FUTURE IMPROVEMENTS - AZTEC AT CHUAR



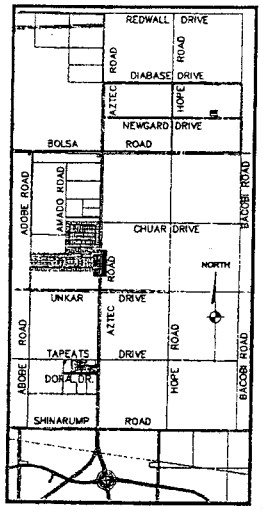
PLAN -AZTEC ROAD

SCALE: HORIZ 1"=40'



PROFILE - AZTEC ROAD

SCALE: HORZ 1"=40'
VERT 1"=4'



KEYMAP

NOT TO SCALE

APPROVED FOR CONSTRUCTION
MAR 3 0 2006
MARICOPA COUNTY DEPARTMENT OF ENVIRONMENTAL QUALITY

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig
1-800-227-2600

Call before you Overhead
1-702-227-2978

BASIS OF BEARINGS

NORTH 00°12'07" EAST - THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 27, TOWNSHIP 20 NORTH, RANGE 16 WEST, G.L.& S. SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (A2S3-W2), WEST ZONE, INTERNATIONAL FOOT, UTILIZING FIRST ORDER OBSERVATIONS PROCESSED BY NGS-OPUS.

M.C.S.S. "SO 25" = LATITUDE 35°00'22.70033"N, LONGITUDE 114°08'21.67239"W (NAD 1983) HEIGHT 2882.46.0318 (NAVD'88)

M.C.S.S. "SO 26" = LATITUDE 35°00'22.42022"N, LONGITUDE 114°07'55.90170"W (NAD 1983) HEIGHT 2486.6826148 (NAVD'88)

SFC OCR 19/20/34/33 = LATITUDE 35°00'19.19754"N, LONGITUDE 114°07'55.00-0"W (NAD 1983) HEIGHT 2506.6462386 (NAVD'88)

BENCHMARK

BENCHMARK # "A22 8" M.C.S.S.
ELEVATION= 2882.28-NAVD (NAVD '88)

DESCRIPTION: 1 1/2" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 1988 "MJS 10A2". LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE:
REFER TO M.A.G. STANDARD DWG. # 302 FOR D.I.P. JOINT RESTRAINTS

NOT FOR CONSTRUCTION

PRELIMINARY

SCALE (H) 1"=40'
SCALE (V) 1"=4'
DRAWN BY EMB
CHECKED BY GLA
DATE 11/22/05

Stanley Consultants INC.
5200 S. Eastern Avenue, Suite 200
Las Vegas, Nevada 89119
(702) 361-1000 FAX (702) 361-1115
www.stanleyconsultants.com

PHOENIX HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH

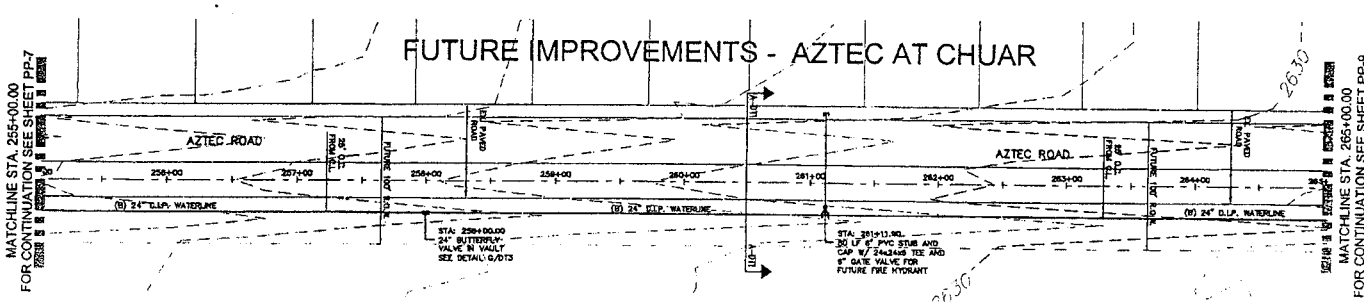
OFFSITE WATER TRANSMISSION LINE - AZTEC RD.
PLAN AND PROFILE - STA. 245+00.00 - 255+00.00
MOHAVE COUNTY ARIZONA

SHEET
PP-7
6 OF 36 SHEETS

SCI PROJECT #
184-05-07.04

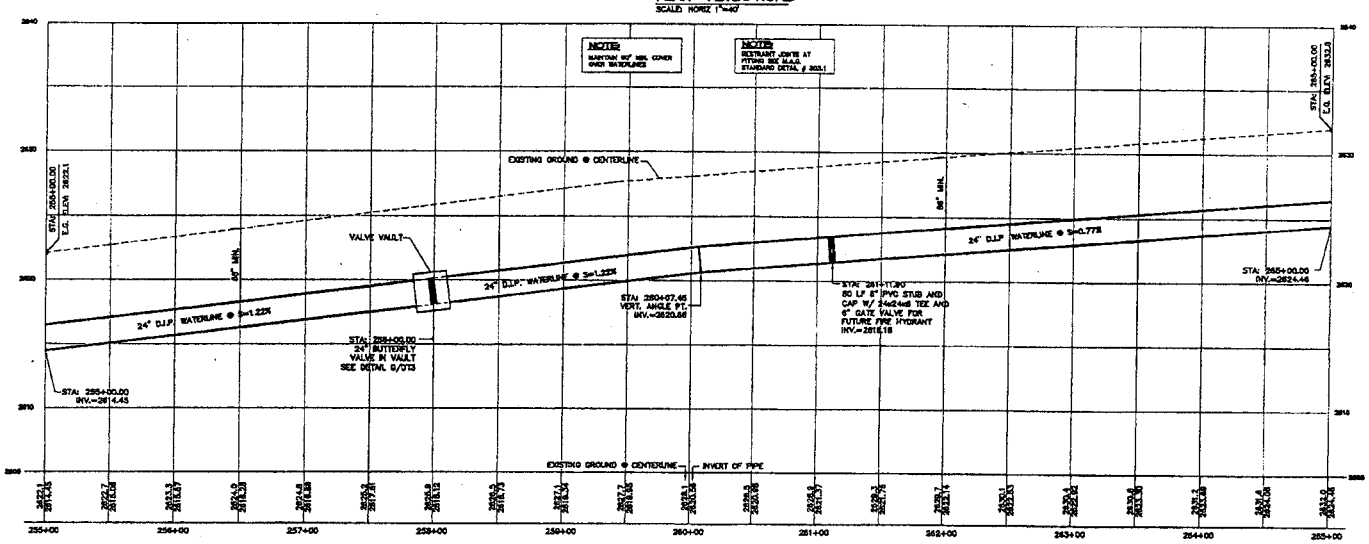
C:\184-19\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\AZTEC-RD-EXT_PP7-PP11.dwg, 2/23/2006 1:52:39 PM, \\LVG-PS1\hp5500-survey-pcl

FUTURE IMPROVEMENTS - AZTEC AT CHUAR



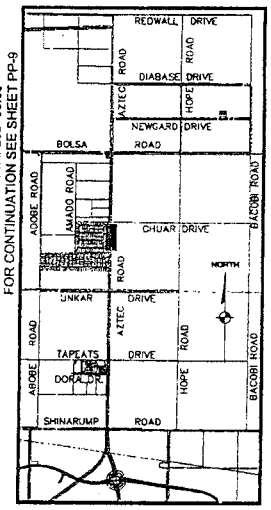
PLAN - AZTEC ROAD

SCALE: HORIZ 1"=40'



PLAN - AZTEC ROAD

SCALE: HORIZ 1"=40'
VERT 1"=4'



KEYMAP

NOT TO SCALE

APPROVED FOR CONSTRUCTION
MAR 3 0 2006
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Arizona utility protection center Inc. 23 states
Call before you Dig
1-800-227-2600
Southwest States (AZ)

Arizona overhead power line operators
Call before you Overhead
1-702-237-2929
Arizona, Nevada, California and other Western Divisions

BASIS OF BEARINGS

NORTH 00°12'40" EAST – THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 23, TOWNSHIP 23 NORTH, RANGE 18 WEST, G.&S.R. BASE AND MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (A2D0-98), WEST ZONE, INTERNATIONAL FOOT, UTILIZING FAST STATIC GPS/KINEMATIC PROCESSED BY NGS-OPUS.

M.C.S.D. "23 23" = LATITUDE 35°09'23.2033"N, LONGITUDE 114°08'29.4724"W (NAD '83) HEIGHT 3662.4439FEE (NAVD'88)

M.C.S.D. "23 24" = LATITUDE 35°09'23.4303"N, LONGITUDE 114°08'28.6303"W (NAD '83) HEIGHT 3646.8463FEE (NAVD'88)

SCC COR 26/23/24/27 = LATITUDE 35°10'10.1676"N, LONGITUDE 114°08'28.0304"W (NAD '83) HEIGHT 3636.6843FEE (NAVD'88)

BENCHMARK

BENCHMARK # "AZT 8" M.C.S.D.
ELEVATION= 3663.01-FEE (NAVD '88)

DESCRIPTION: 1 1/4" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 1994 "MCS 1334AZT" LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE:
REFER TO M.A.G. STANDARD DWG. # 302 FOR D.I.P. JOINT RESTRAINTS

NOT FOR CONSTRUCTION

PRELIMINARY

SCALE (H) 1"=40'
SCALE (V) 1"=4'
DRAWN BY DAG
CHECKED BY DLA
DATE 11/22/05

Stanley Consultants INC.
1420 E. Camino Arroyo, Suite 202
Lake Havasu City, AZ 86403
(928) 680-0113
www.stanleyconsultants.com

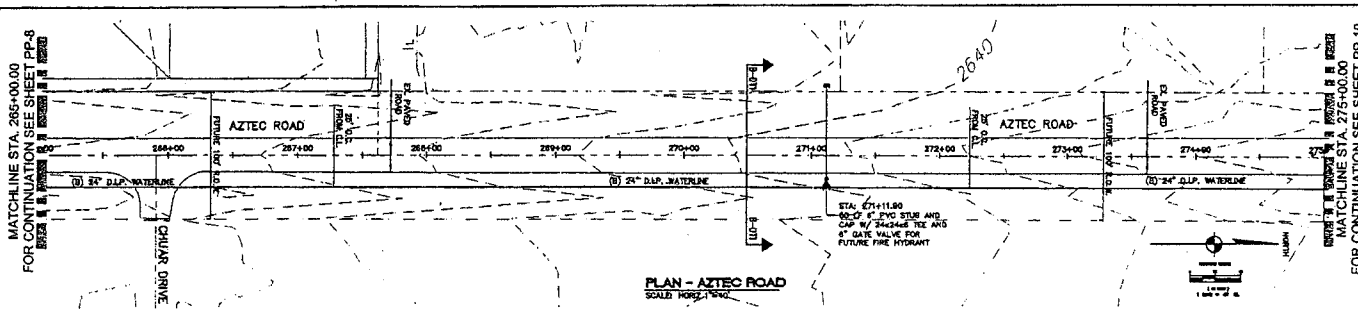
RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH

OFFSITE WATER TRANSMISSION LINE - AZTEC RD.
PLAN AND PROFILE - STA. 255+00.00 - 265+00.00
MOHAVE COUNTY ARIZONA

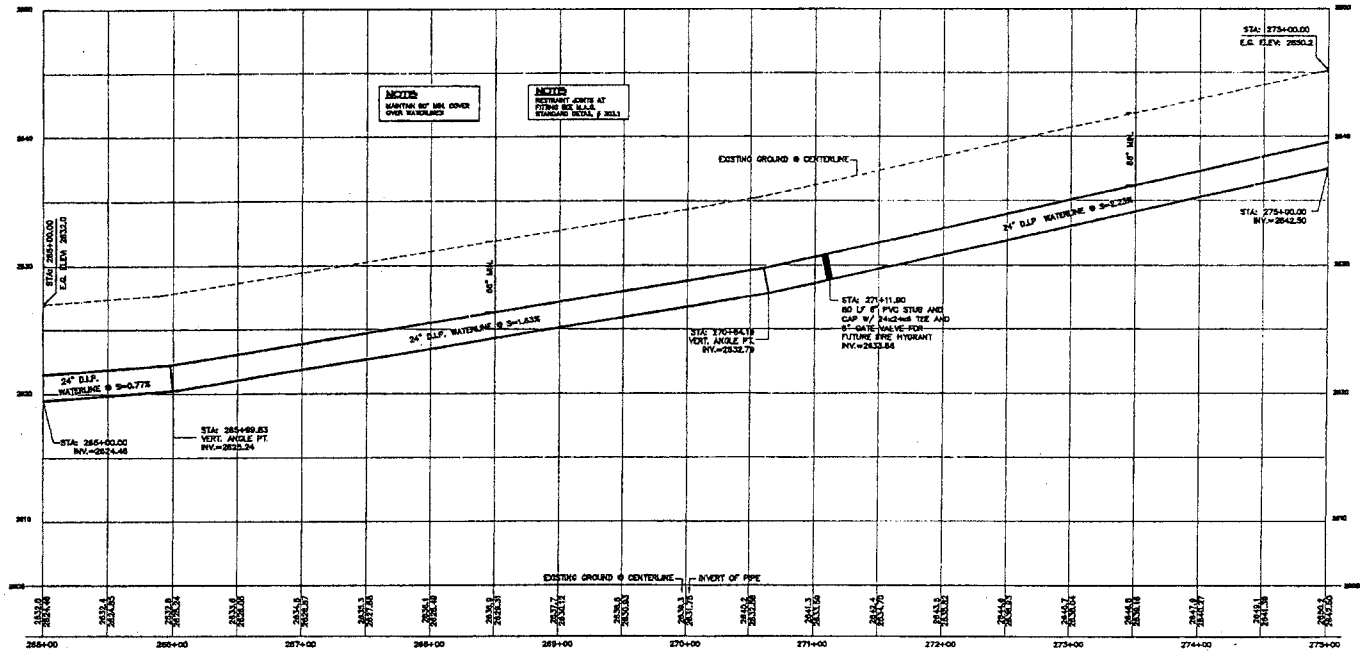
SHEET
PP-8
10 OF 31 SHEETS

SCI PROJECT
164-98.07.04

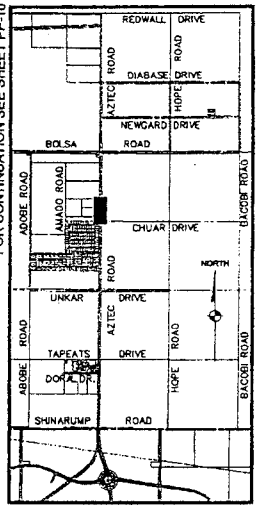
C:*119\dwg\AZTEC-RD-EXTENSION\lmp-Plans 30%\PH1\AZTEC-RD-EXT_PP7-PP11.dwg, 2/23/2006 1:53:01 PM, \\LVG-PS1\hp5500--survey-pcl



PLAN - AZTEC ROAD
SCALE: HORZ 1"=50'



PLAN - AZTEC ROAD
SCALE: HORZ 1"=50'
VERT 1"=4'



KEYMAP
NOT TO SCALE

APPROVED FOR CONSTRUCTION
MAR 3 0 2006
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig 1-800-277-1300

Call before you Overhead 1-702-227-2929

BASIS OF BEARINGS

NORTH 00°16'47" EAST – THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 25, TOWNSHIP 31 NORTH, RANGE 14 WEST, G.&S.R. & B&M, RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (ADJ-96), WEST ZONE, INTERNATIONAL FOOT, UTILIZING FAST STATIC OBSERVATIONS PROCESSED BY NGS-OPUS.

M.O.S.D. "20 35" = LATITUDE 35°16'52.7033"N, LONGITUDE 114°05'21.6734"W (NAD '83) HEIGHT 2642.4430(ft) (NAVD'88)

M.C.S.D. "20 35" = LATITUDE 35°16'52.4205"N, LONGITUDE 114°05'18.5338"W (NAD '83) HEIGHT 2646.3462(ft) (NAVD'88)

SEC COR 25/30/34/37 = LATITUDE 35°16'51.9197"N, LONGITUDE 114°05'20.8605"W (NAD '83) HEIGHT 2648.4533(ft) (NAVD'88)

BENCHMARK

BENCHMARK # "A21 8" M.O.S.D.
ELEVATION= 2662.6(ft) (NAVD '88)

DESCRIPTION: 1 1/2" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 1998 "M.A.G. HOTAW", LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE:
REFER TO M.A.G. STANDARD DWG. # 302 FOR D.I.P. JOINT RESTRAINTS

NOT FOR CONSTRUCTION

PRELIMINARY

SCALE (H) 1"=50'
SCALE (V) 1"=4'
DRAWN BY: EMG
CHECKED BY: BLA
DATE: 11/29/05

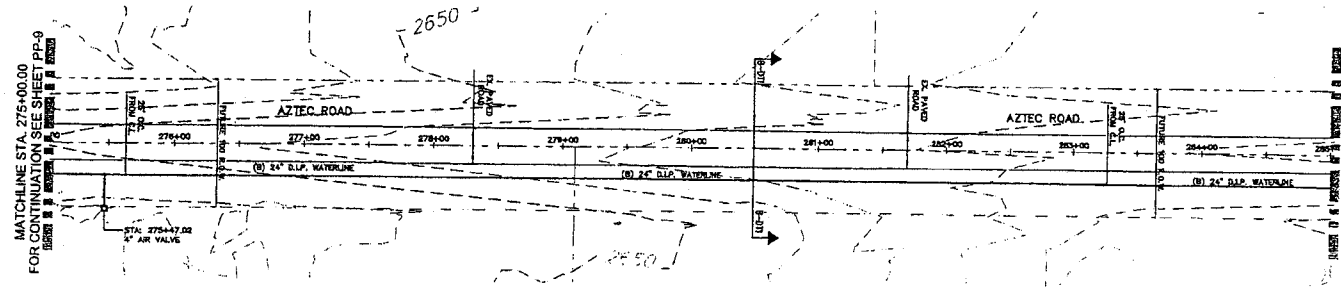
Stanley Consultants INC.

RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH
OFFSITE WATER TRANSMISSION LINE – AZTEC RD.
PLAN AND PROFILE – STA. 265+00.00 – 279+00.00
MOHAVE COUNTY ARIZONA

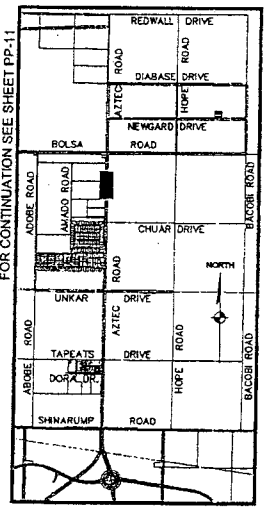
SHEET
PP-9
11 OF 31 SHEETS

SCI PROJECT
18446.07.04

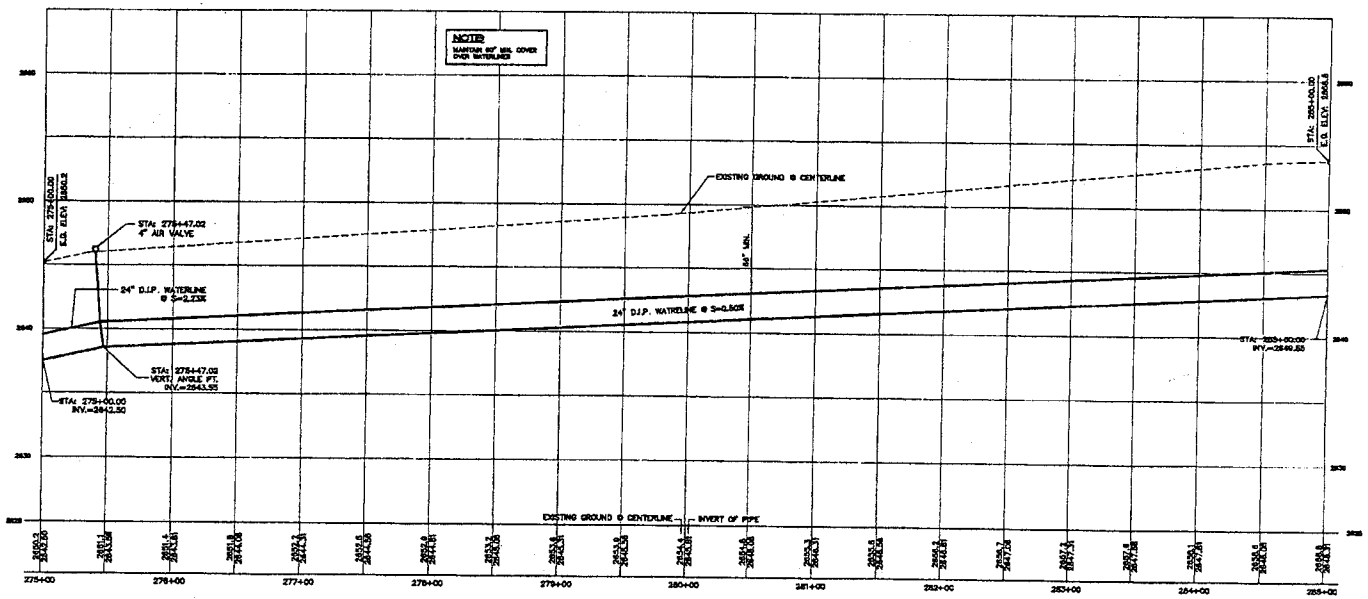
C:\2119\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\AZTEC-RD-EXT_PP7-PP11.dwg, 2/23/2006 1:53:57 PM, \\LVG-PS1\hp5500-survey-pcl



PLAN - AZTEC ROAD
SCALE HORIZ 1"=40'



KEYMAP
NOT TO SCALE



PLAN - AZTEC ROAD
SCALE HORIZ 1"=40'
VERT 1"=4'

APPROVED FOR CONSTRUCTION
MAR 3 0 2006
MARICOPA COUNTY ENVIRONMENTAL SERVICES

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig 1-800-227-2600

Call before you Overhead 1-702-217-2929

BASIS OF BEARINGS

NORTH 89°12'47" EAST – THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 23, TOWNSHIP 31 NORTH, RANGE 18 WEST, GILA & SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (ADJUSTED), WEST ZONE, INTERNATIONAL FOOT, UTILIZING FAST STATIC OBSERVATIONS PROCESSED BY NGS—SPLIS.

M.G.R.D. "BD 32" = LATITUDE 35°08'32.70025"N, LONGITUDE 114°09'21.87245"W (NAD '83) HEIGHT 3092.463M (NAVD'88)

M.G.R.D. "BD 30" = LATITUDE 35°08'26.43032"N, LONGITUDE 114°11'18.63305"W (NAD '83) HEIGHT 3484.8948M (NAVD'88)

SEC COR 23/26/24/27 = LATITUDE 35°07'13.19784"N, LONGITUDE 114°10'56.05845"W (NAD '83) HEIGHT 2505.853MM (NAVD'88)

BENCHMARK

BENCHMARK # "ATT 8" M.G.R.D.
ELEVATION= 3492.09-MM, (NAVD '88)

DESCRIPTION: 1 1/2" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY MON. TRUE 103437, LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE:
REFER TO M.A.G. STANDARD DWG. # 302 FOR D.I.P. JOINT RESTRAINTS

NOT FOR CONSTRUCTION

PRELIMINARY

SCALE (H)	1"=40'
SCALE (V)	1"=4'
DRAWN BY	EMG
CHECKED BY	RLA
DATE	11/22/05

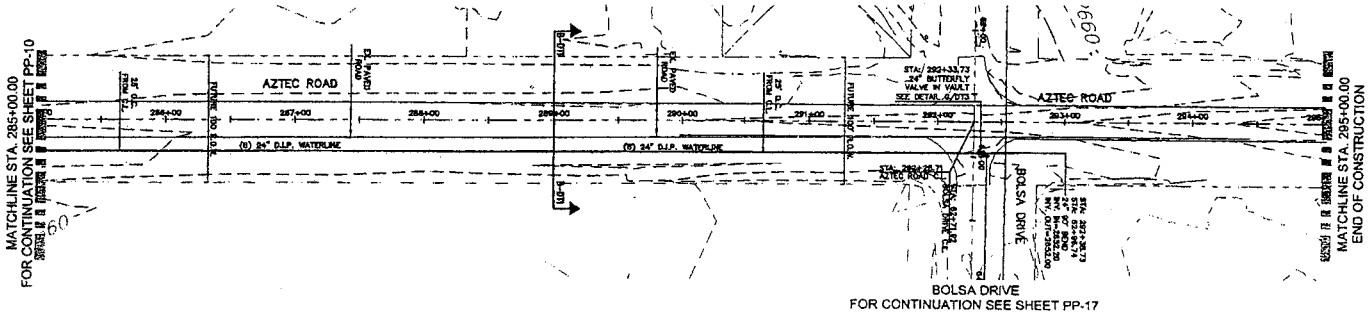
Stanley Consultants INC.

RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH
CITRITE WATER TRANSMISSION LINE - AZTEC RD.
PLAN AND PROFILE - STA. 275+00.00 - 285+00.00
MOHAVE COUNTY ARIZONA

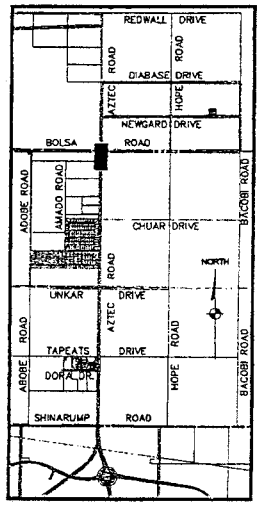
SHEET
PP-10
12 OF 31 SHEETS

SC 7803.2017
1849.07.04

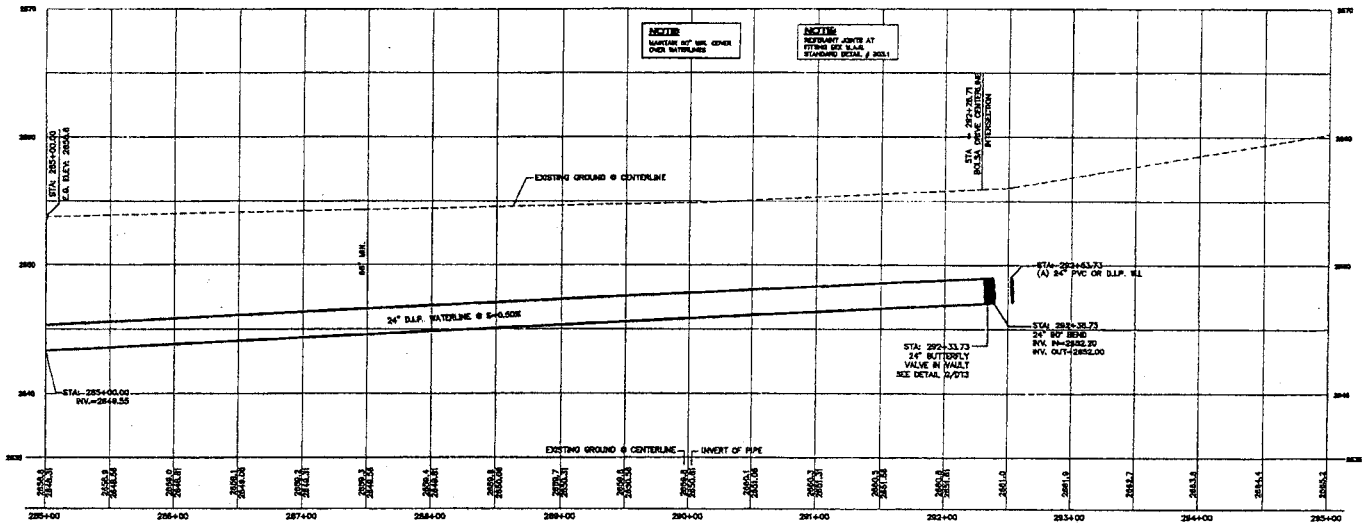
C:\jobs\1849\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\AZTEC-RD-EXT_PP7-PP11.dwg, 2/23/2006 1:54:19 PM, \\LVG-PS1\pp5500-survey-pcl



PLAN - AZTEC ROAD
SCALE: HORIZ 1"=40'



KEYMAP
NOT TO SCALE



PROFILE - AZTEC ROAD
SCALE: HORIZ 1"=40'
VERT 1"=4'

APPROVED FOR CONSTRUCTION
MAR 3 0 2006

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig 1-800-227-2600

Call before you Overhead 1-702-227-2929

BASIS OF BEARINGS

NORTH 00°13'40" EAST – THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 27, TOWNSHIP 3 NORTH, RANGE 18 WEST, G&S & SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (A2SS-HPT), WEST ZONE, INTERNATIONAL FOOT, UTILIZING FAST STATIC OBSERVATIONS PROCESSED BY NGS-OPUS.

M.C.D.S. "SD 32" = LATITUDE 35°09'33.70033"N, LONGITUDE 114°09'31.27343"W (NAD '83) HGHT 3555.4139181 (NAVD'88)

M.C.D.S. "SD 33" = LATITUDE 35°09'33.43033"N, LONGITUDE 114°09'38.84309"W (NAD '83) HGHT 3446.8926247 (NAVD'88)

SEC COR 26/35/34/27 = LATITUDE 35°10'15.11774"N, LONGITUDE 114°10'38.53345"W (NAD '83) HGHT 3506.6543385 (NAVD'88)

BENCHMARK

BENCHMARK # "AZT 6" M.C.D.S.
ELEVATION= 3445.2648ft (NAVD '88)

DESCRIPTION: 1 1/2" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 1988 "BLS 1324AZ", LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE:
REFER TO M.A.G. STANDARD DWG # 302 FOR D.I.P JOINT RESTRAINTS

NOT FOR CONSTRUCTION

PRELIMINARY

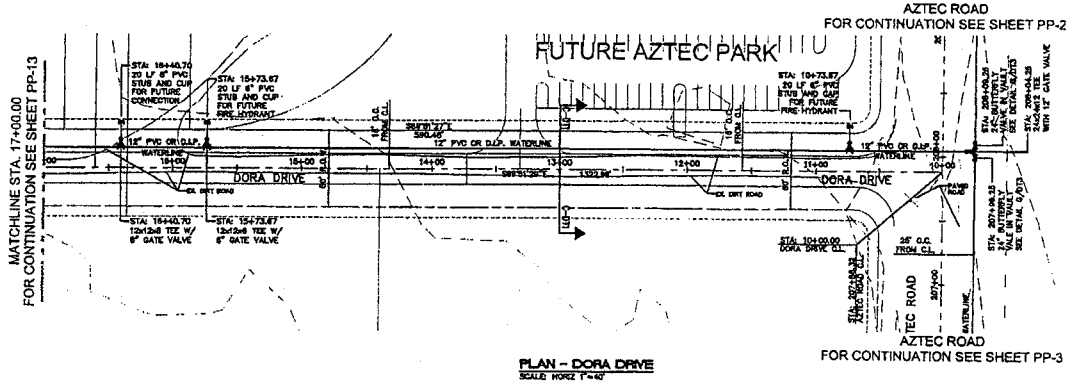
SCALE (H) 1"=40'
SCALE (V) 1"=4'
DRAWN BY: EJG
CHECKED BY: D.L.A.
DATE: 11/29/05

Stanley Consultants INC.

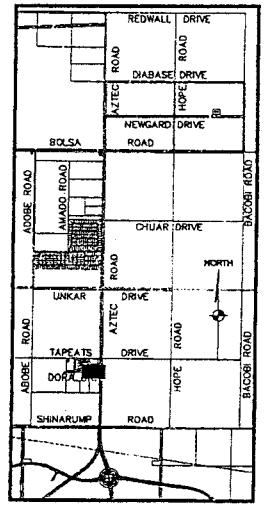
RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH
OFFSITE WATER TRANSMISSION LINE - AZTEC RD.
PLAN AND PROFILE - STA. 270+00.00 - 295+00.00
MOHAVE COUNTY ARIZONA

SHEET
PP-11
13 OF 31 SHEETS
SCI PROJECT#
15446.07.04

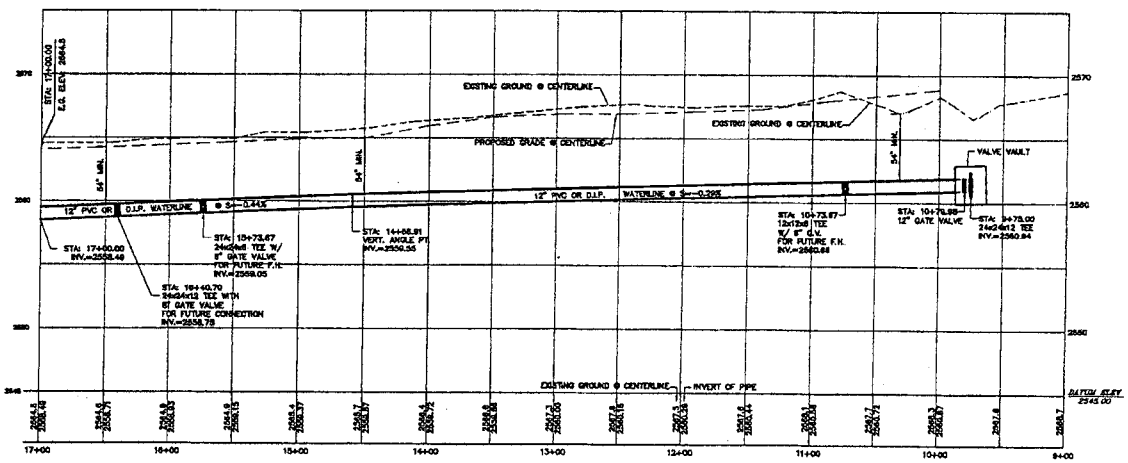
C:\15149\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\AZTEC-RD-EXT_PP7-PP11.dwg, 2/23/2006 1:54:54 PM, \\LVC-PS1\hp5500-survey-pcl



PLAN - DORA DRIVE
SCALE: HORIZ 1"=40'



KEYMAP
NOT TO SCALE



PROFILE - DORA DRIVE
SCALE: HORIZ 1"=40'
VERT 1"=4'

NOTE: MAINTAIN 48" MIN. COVER OVER WATERLINES

NOTE: RESTRAINT JOINTS AT FITTING SEE M.A.G. STANDARD DETAIL # 303.1

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig 1-800-227-2600

Call before you Overhead 1-702-227-2929

BASIS OF BEARINGS

NORTH 00°12'07" EAST – THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 20, TOWNSHIP 20 NORTH, RANGE 14 WEST, G&S & SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (ACS3-W3), WEST ZONE, INTERNATIONAL FOOT, UTILIZING FIRST ORDER GEODETIC CONTROL PROVIDED BY MCS-GPSN.

M.C.S.D. "20 20" = LATITUDE 35°07'32.70333"N, LONGITUDE 114°07'21.87246"W (NAD '83) HEIGHT 2882.4(MSL) (NAVD'88)

M.C.S.D. "20 29" = LATITUDE 35°07'32.43232"N, LONGITUDE 114°07'20.24224"W (NAD '83) HEIGHT 2884.6(MSL) (NAVD'88)

GCD CDR 20/29/34/27 = LATITUDE 35°07'34.10754"N, LONGITUDE 114°07'20.0344"W (NAD '83) HEIGHT 2881.6(MSL) (NAVD'88)

BENCHMARK

BENCHMARK # 1427 6" M.C.S.D.
ELEVATION= 2882.6(MSL) (NAVD '88)

DESCRIPTION: 1 1/2" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 1999 "ELS 16342" LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE

NOTE: REFER TO M.A.G. STANDARD DWG. # 302 FOR D.I.P. JOINT RESTRAINTS

APPROVED FOR CONSTRUCTION
MAR 3 0 2006
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

NOT FOR CONSTRUCTION

PRELIMINARY

SCALE HO 1"=40'
SCALE VO 1"=4'
DRAWN BY DJG
CHECKED BY DLA
DATE 11/22/05

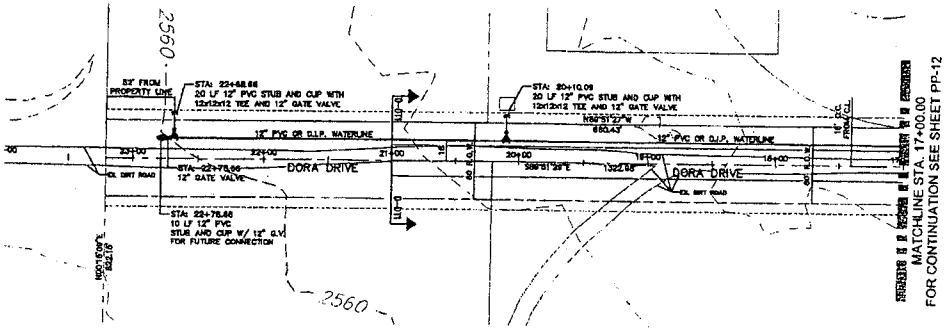
Stanley Consultants INC.

RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH

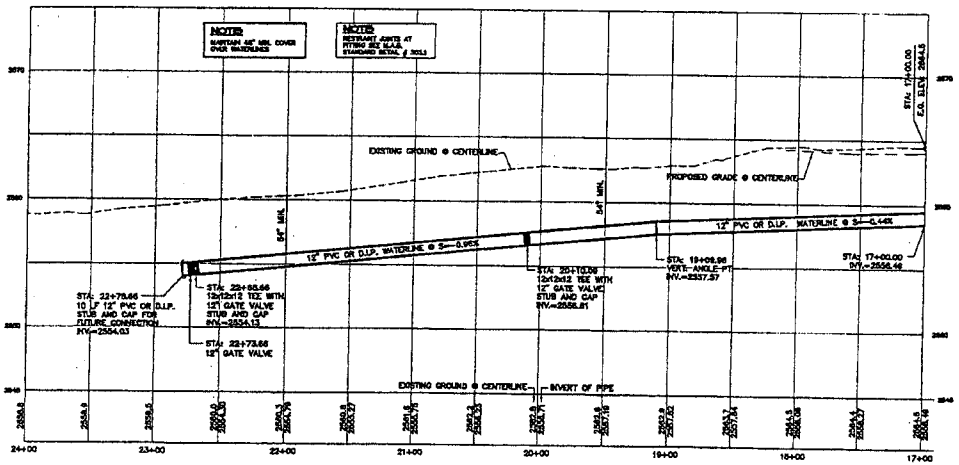
OFFSITE WATER TRANSMISSION LINE-DORA DRIVE
PLAN AND PROFILE - STA. 9+00.00 - 17+00.00
MOHAVE COUNTY ARIZONA

SHEET PP-12
14 OF 31 SHEETS
SCI PROJECT 154.46.07.04

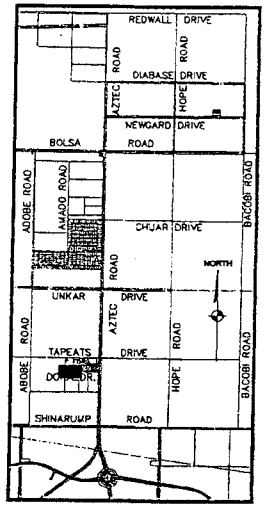
C:\Stanley\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\DORA DR_PP12-PP13.dwg, 2/23/2006 1:57:42 PM, \\LVG-PS1\hp5500-survey-pct



PLAN - DORA DRIVE
SCALE: HORIZ 1"=40'



PROFILE - DORA DRIVE
SCALE: HORIZ 1"=40'
VERT 1"=4'



KEYMAP
NOT TO SCALE

APPROVED FOR CONSTRUCTION
MAR 30 2006
MARICOPA COUNTY ENVIRONMENTAL SERVICES

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig 1-800-227-2600

Call before you Overhead 1-602-227-1819

BASIS OF BEARINGS

NORTH (GPLE-07 EAST - THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 12, TOWNSHIP 2[illegible] NORTH, RANGE 1[illegible] WEST, G.& S. SALT RIVER BASELINE, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY A-C ARIZONA COORDINATE SYSTEM OF 1983 (A2D3-1983), WEST ZONE, ESTIMATED FROM FIELD FAST STATIC OBSERVATIONS PROCESSED BY NGS-OPUS.

M.A.G.S. "[illegible] 20" = LATITUDE [illegible] (NAD '83) LONGITUDE [illegible] (NAD '83) HEIGHT [illegible] (NAVD'88)

M.A.G.S. "[illegible] 20" = LATITUDE [illegible] (NAD '83) LONGITUDE [illegible] (NAD '83) HEIGHT [illegible] (NAVD'88)

SEC COR 20/29/24/21 = LATITUDE [illegible] (NAD '83) LONGITUDE [illegible] (NAD '83) HEIGHT [illegible] (NAVD'88)

BENCHMARK

BENCHMARK # "A27" OF M.A.G.S.D.
ELEVATION= [illegible] (NAVD '88)

DESCRIPTION: 1 1/4" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 1988 "BLS 1024", LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE:
REFER TO M.A.G. STANDARD DWG. # 302 FOR D.I.P. JOINT RESTRAINTS

NOT FOR CONSTRUCTION

PRELIMINARY

SCALE (H) 1"=40'
SCALE (V) 1"=4'
DRAWN BY DAG
CHECKED BY RLA
DATE 11/22/05

Stanley Consultants INC.
500 S. Country Acres, Suite 200
Gilbert, Arizona 85233
(480) 926-5400 Fax (480) 926-5163
www.stanleyconsultants.com

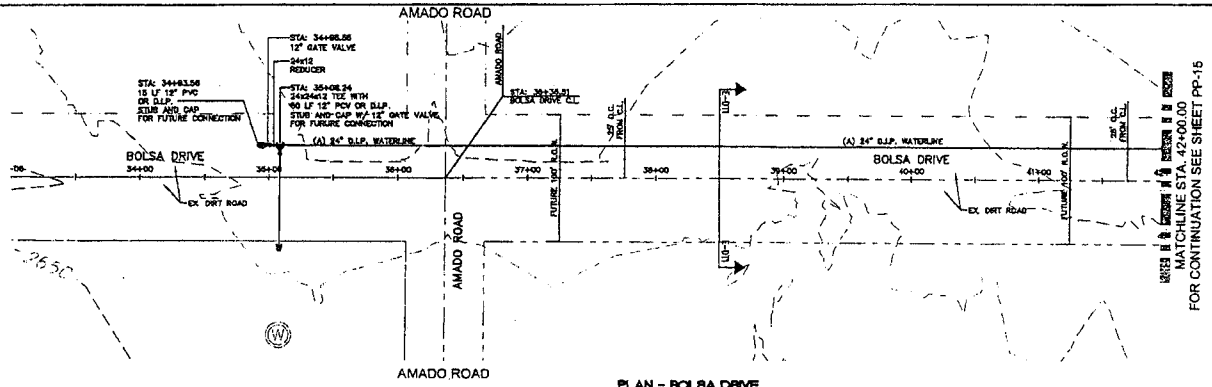
RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH

OFFSITE WATER TRANSMISSION LINE-DORA DRIVE
PLAN AND PROFILE - STA. 17+00.00 - 24+00.00
MOHAVE COUNTY ARIZONA

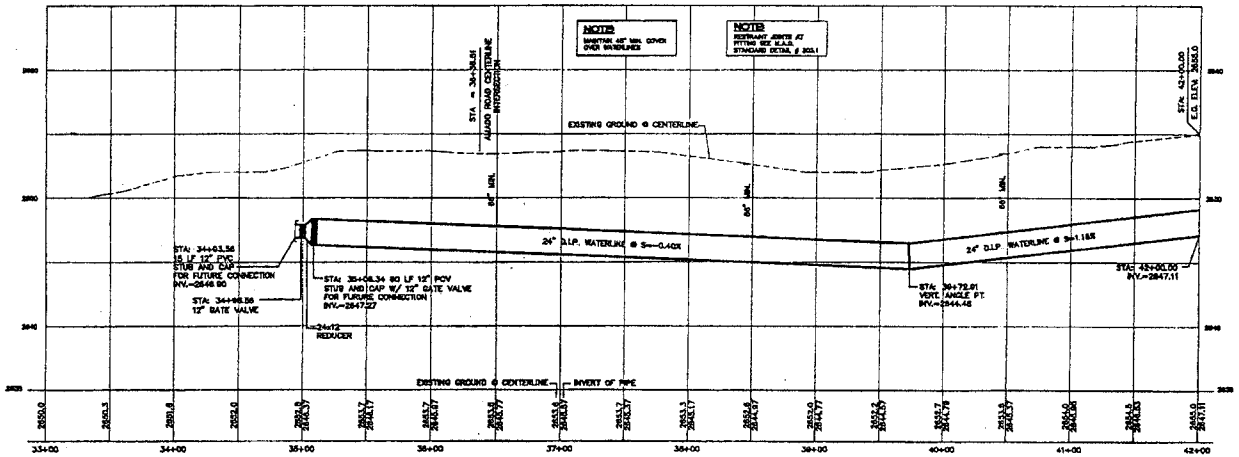
SHEET
PP-13
15 OF 31 SHEETS

50 [illegible]
10-49-07-24

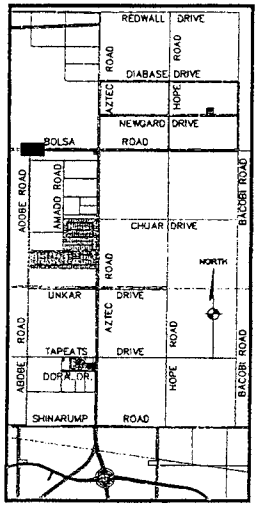
C:\[illegible]119\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\DORA DR_PP12-PP13.dwg, 2/23/2006 1:58:39 PM, \\LVG-PS1\hp5500-survey-pcl



PLAN - BOLSA DRIVE
SCALE: HORIZ 1"=40'



PROFILE - BOLSA DRIVE
SCALE: HORIZ 1"=40'
VERT 1"=4'



KEYMAP
NOT TO SCALE

APPROVED FOR CONSTRUCTION
MAR 3 0 2006

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig 1-800-227-2600

Call before you Overhead 1-702-227-2929

BASIS OF BEARINGS

NORTH 00°16'40" EAST – THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 27, TOWNSHIP 21 NORTH, RANGE 19 WEST, G&S & SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (ADJ8-NGS), WEST ZONE, INTERNATIONAL FOOT, UTILIZING FAST STATIC OBSERVATIONS PROCESSED BY NGS-OPUS.

M.G.S.D. "80 22" = LATITUDE 35°09'22.70205"N.
LONGITUDE 114°08'51.57340"W (NAD '83)
HEIGHT 2952.46(NAVD88) (NAVD'88)

M.G.S.D. "80 20" = LATITUDE 35°09'22.41933"N.
LONGITUDE 114°08'48.83329"W (NAD '83)
HEIGHT 2946.65(NAVD88) (NAVD'88)

SEC COR 26/35/34/27 = LATITUDE 35°09'10.19796"N.
LONGITUDE 114°08'48.83340"W (NAD '83)
HEIGHT 2950.86(NAVD88) (NAVD'88)

BENCHMARK

BENCHMARK # "A27 8" M.G.S.D.
ELEVATION= 3055.6(NAVD 88)

DESCRIPTION: 3 1/2" ALUMINUM CAP IN CONCRETE, STAMP MOHAVE COUNTY 1988 "M.G.S. 1034D", LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE

REFER TO M.A.G. STANDARD DWG # 302 FOR D.I.P. JOINT RESTRAINTS

NOT FOR CONSTRUCTION

PRELIMINARY

SCALE (H) 1"=40'
SCALE (V) 1"=4'
DRAWN BY DJG
CHECKED BY DLA
DATE 11/22/05

Stanley Consultants INC.

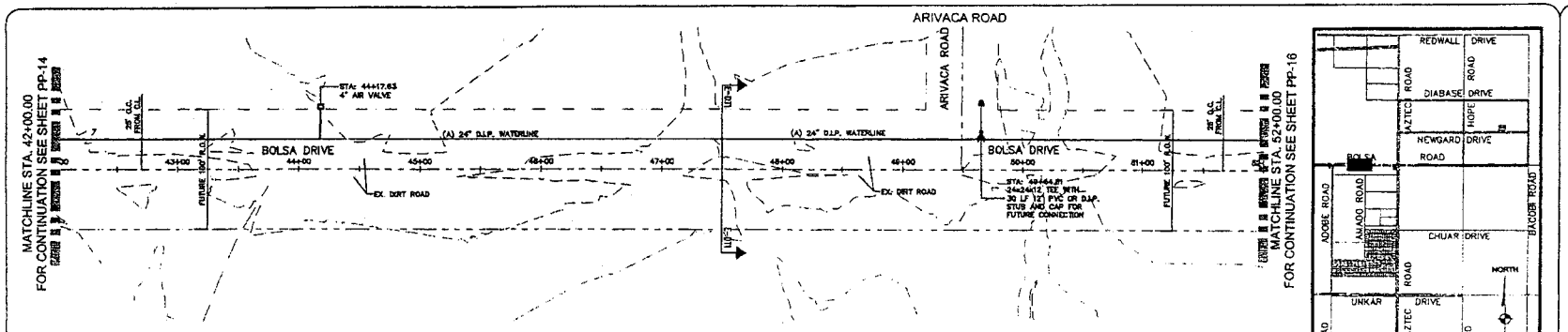
RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH

OFFSITE WATER TRANSMISSION LINE - BOLSA DR.
PLAN AND PROFILE - STA. 33+00.00 - 42+00.00
MOHAVE COUNTY ARIZONA

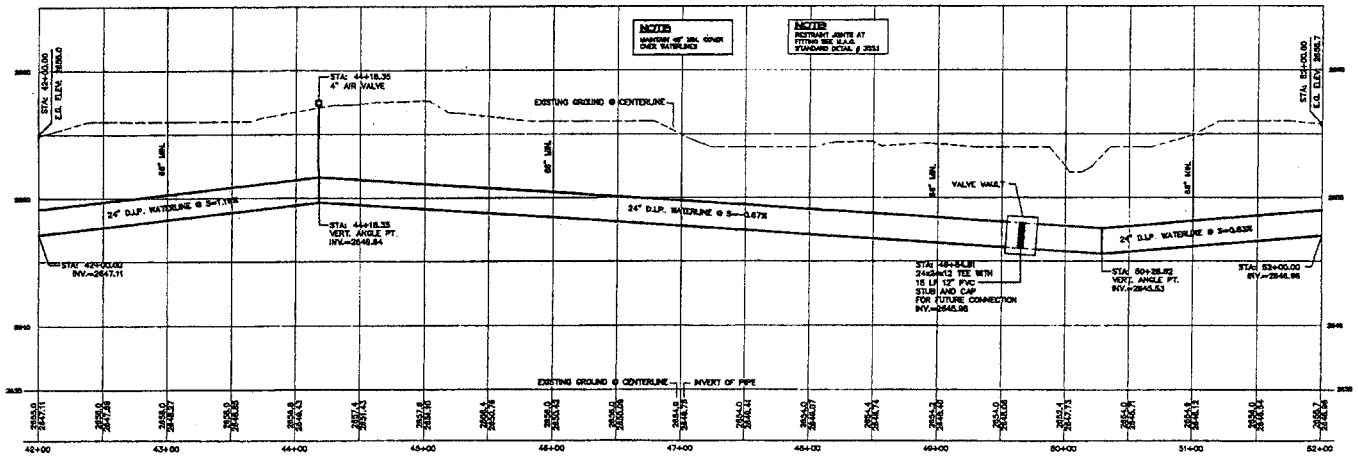
SHEET
PP-14
14 OF 31 SHEETS

SCI PROJECT
13649.07.04

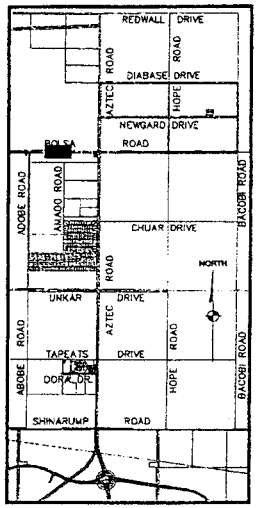
C:\12119\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\BOLSA-RD_PP14-Pp19.dwg, 2/23/2006 2:02:23 PM, \\LVG-PS1\hp5500-survey-pcl



PLAN - BOLSA DRIVE
SCALE: HORIZ 1"=40'



PROFILE - BOLSA DRIVE
SCALE: HORIZ 1"=40'
VERT 1"=4'



KEYMAP
NOT TO SCALE

NORTH

APPROVED FOR CONSTRUCTION
MAR 3 0 2006

NOT FOR CONSTRUCTION
PRELIMINARY

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig
1-800-227-2600

Call before you Overhead
1-792-273-2929

BASIS OF BEARINGS

NORTH 00°13'00" EAST – THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 20, TOWNSHIP 39 NORTH, RANGE 19 WEST, GLA & SRLT MAIN MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (A2B3-WEST), WEST ZONE, INTERNATIONAL FOOT, UTILIZING FAST STATIC OBSERVATIONS PROCESSED BY NGS-OPUS.

M.C.S.D. "80 20" = LATITUDE 35°00'25.70034"N.
LONGITUDE 114°08'26.87240"W (NAD '83)
HEIGHT 2585.463MTR (NAVD'88)

M.C.S.D. "80 35" = LATITUDE 35°00'22.43032"N.
LONGITUDE 114°08'26.83306"W (NAD '83)
HEIGHT 2486.0462MT (NAVD'88)

SED GCR 39/20/34/27 = LATITUDE 35°10'16.11679"N.
LONGITUDE 114°08'08.03944"W (NAD '83)
HEIGHT 2536.6453MTR (NAVD'88)

BENCHMARK

BENCHMARK # "A27 8" M.C.S.D.
ELEVATION= 2662.81-BR (NAVD '88)

DESCRIPTION: 1 1/4" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 1989 "MJB 10347", LOCATED AT THE NORTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE:
REFER TO M.A.G. STANDARD DWG. # 302 FOR D.I.P. JOINT RESTRAINTS

Stanley Consultants INC.

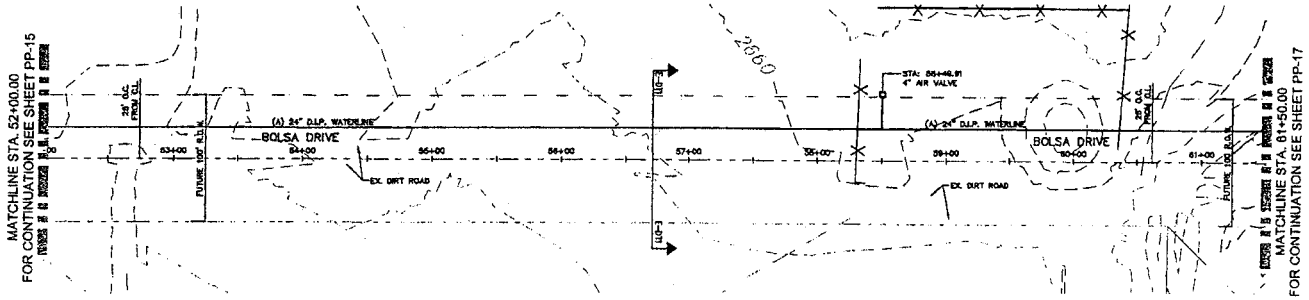
SCALE (H) 1"=40'
SCALE (V) 1"=4'
DRAWN BY DMD
CHECKED BY RLA
DATE 11/22/05

RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH
OFFSITE WATER TRANSMISSION LINE - BOLSA DR.
PLAN AND PROFILE - STA. 42+00.00 - 52+00.00
MOHAVE COUNTY ARIZONA

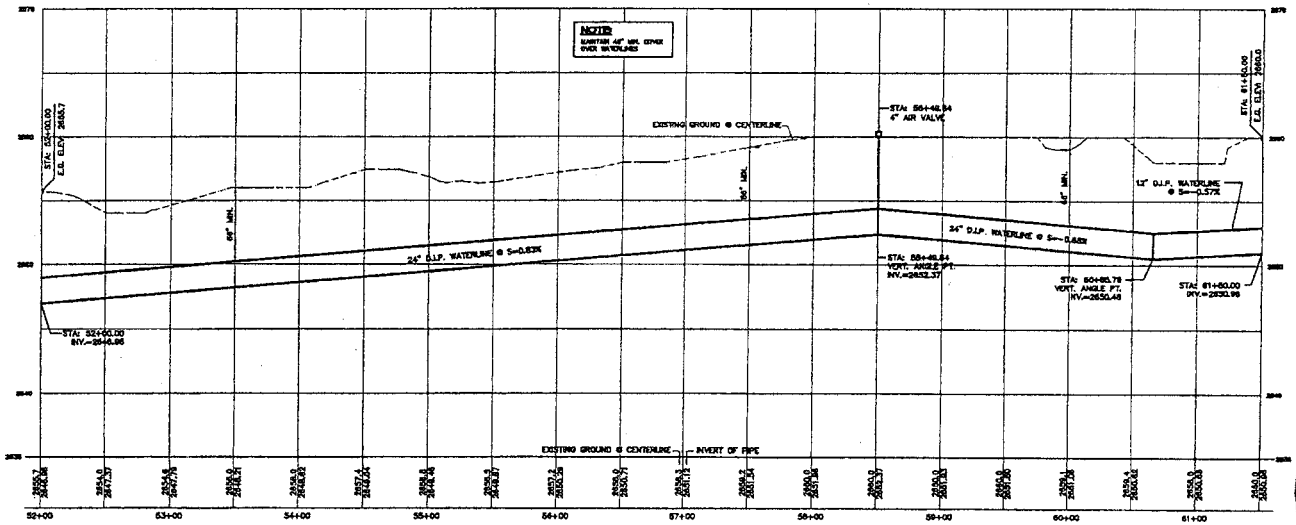
SHEET
PP-15
17 OF 31 SHEETS

SCI PROJECT:
19-49.07.04

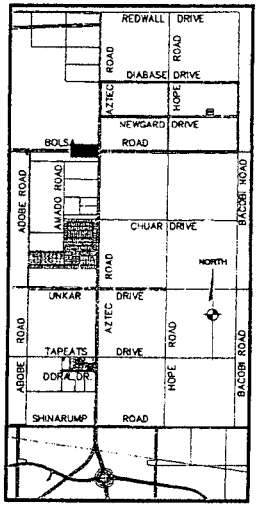
C:\Z19\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\BOLSA-RD_PP14-Pp19.dwg, 2/23/2006 2:02:59 PM, \\LVG-PS1\hp5500-survey-pcl



PLAN - BOLSA DRIVE
SCALE: HORIZ 1"=40'



PROFILE - BOLSA DRIVE
SCALE: HORIZ 1"=40'
VERT 1"=4'



KEYMAP
NOT TO SCALE

NORTH

APPROVED FOR CONSTRUCTION
MAR 30 2006
MARICOPA COUNTY ENVIRONMENTAL SERVICES

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig 1-800-227-2600

Call before you Overhead 1-702-227-2828

BASIS OF BEARINGS

NORTH 00°16'40" EAST — THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 23, TOWNSHIP 2[illegible] NORTH, RANGE 5E NORTH, G&S & SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (ACS3-NAD83), WEST ZONE, INTERNATIONAL FEET, UTILIZING FAST STATIC OBSERVATIONS PROCESSED BY NGS-OPUS.

M.C.R.S. "SO 22" = LATITUDE [illegible] (NAD '83) LONGITUDE [illegible] (NAD '83) HEIGHT [illegible] (NAVD'88)

M.C.R.S. "SO 35" = LATITUDE [illegible] (NAD '83) LONGITUDE [illegible] (NAD '83) HEIGHT [illegible] (NAVD'88)

SEC COR 26/35/34/27 = LATITUDE [illegible] (NAD '83) LONGITUDE [illegible] (NAD '83) HEIGHT [illegible] (NAVD'88)

BENCHMARK

BENCHMARK # "A27 8" M.C.R.S.
ELEVATION= [illegible] (NAVD '88)

DESCRIPTION: 1 1/2" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 1984 "MLR MONUM", LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE:
REFER TO M.A.G. STANDARD DWG. # 302 FOR D.I.P. JOINT RESTRAINTS

NOT FOR CONSTRUCTION

PRELIMINARY

SCALE (H) 1"=40'
SCALE (V) 1"=4'
DRAWN BY EMG
CHECKED BY BLA
DATE 11/22/05

Stanley Consultants INC.

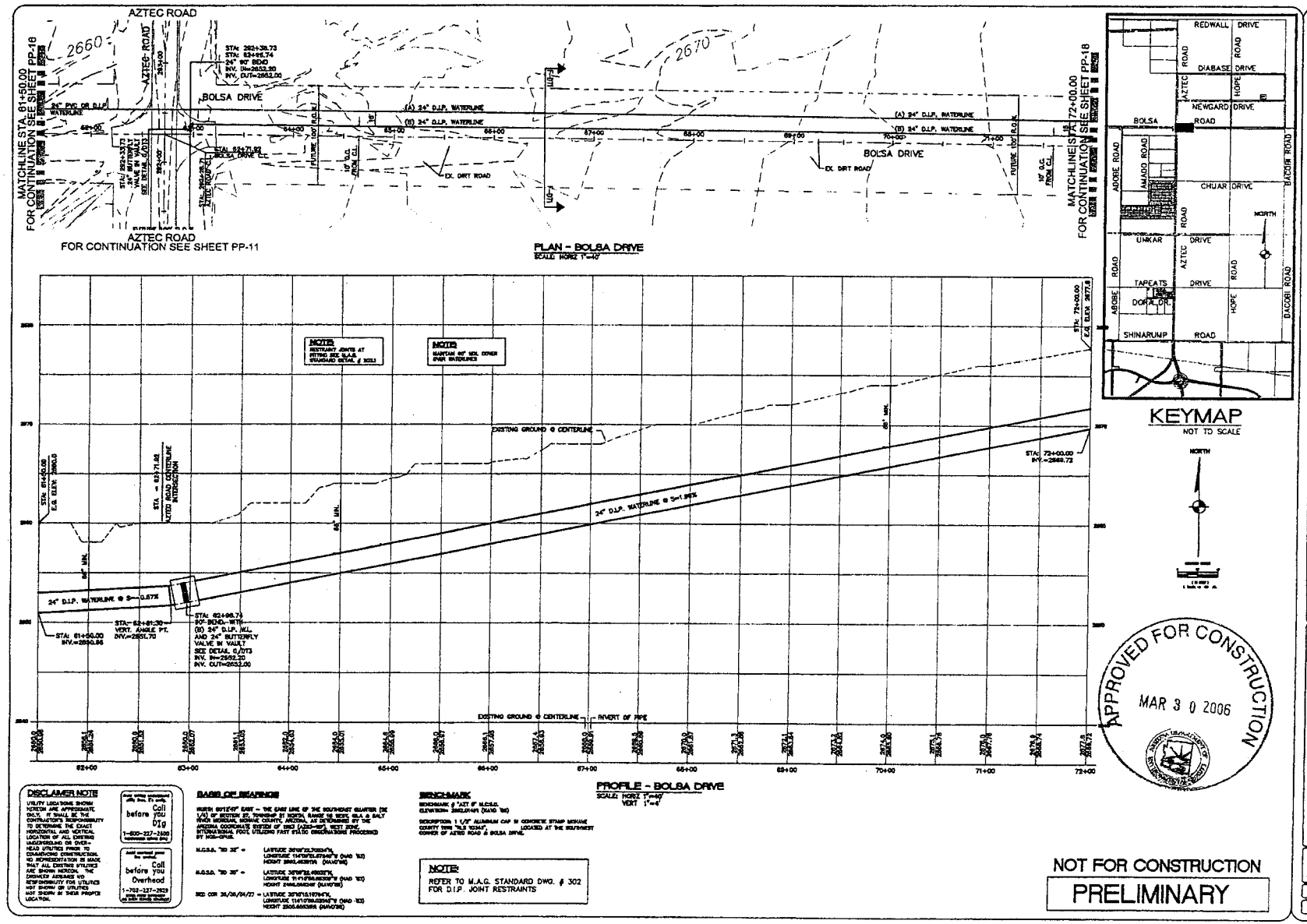
IN-HOUSE HOUSER ARIZONA, LLC
GOLDEN VALLEY RANCH

OFFSITE WATER TRANSMISSION LINE - BOLSA DR.
PLAN AND PROFILE - STA. 52+00.00 - 61+00.00
MOHAVE COUNTY ARIZONA

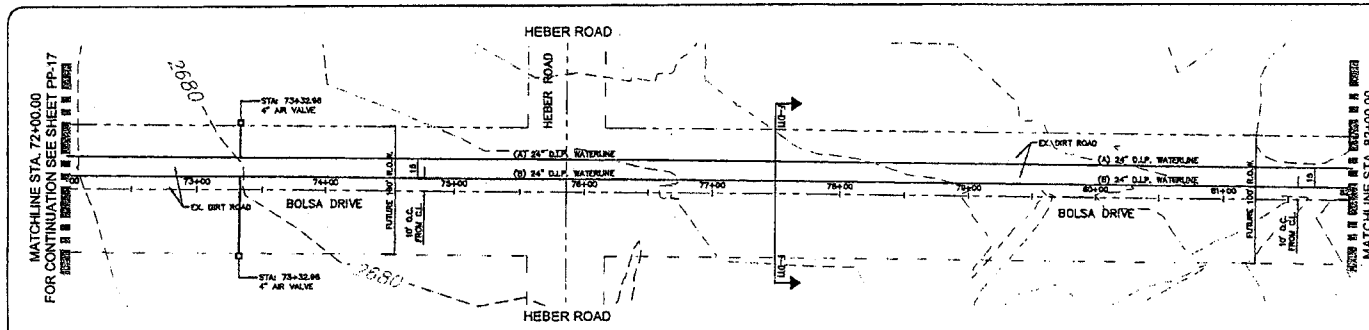
SHEET
PP-16
16 OF 31 SHEETS

SC PROJECT#
78446.07.04

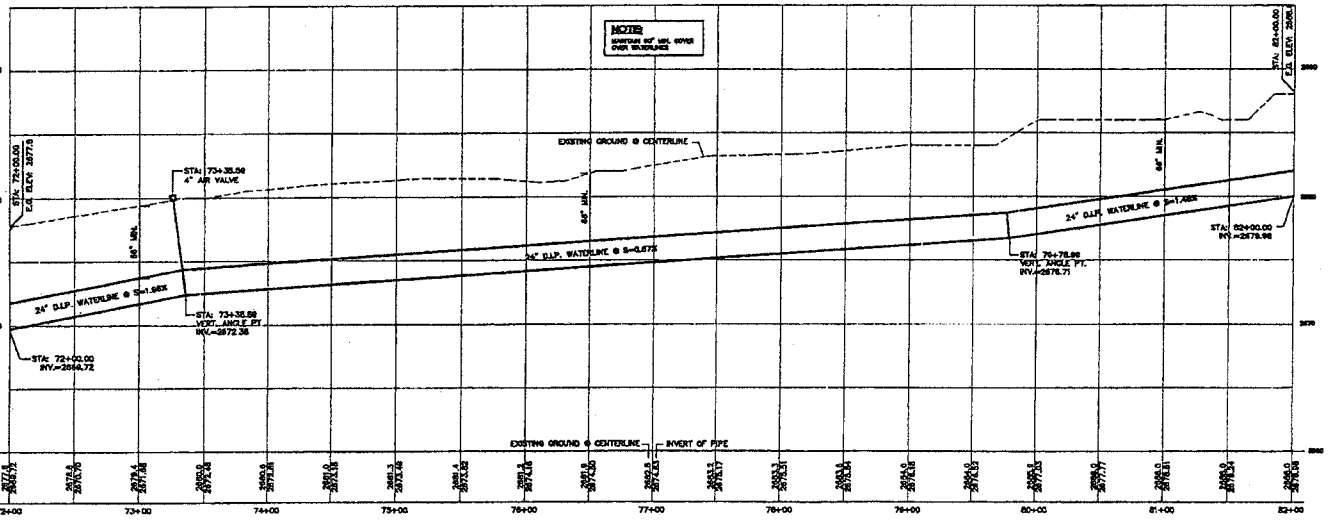
C:\[illegible]119\dwg\AZTEC-RD-EXTENSION\mp-Plans 30%\PH1\BOLSA-RD_PP14-Pp19.dwg, 2/23/2006 2:03:30 PM, \\LVG-PS1\hp5500-survey-pcl



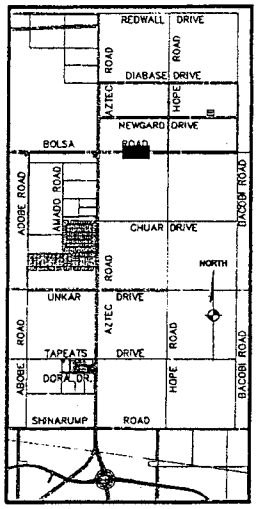
C:\...\15-119\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\BOLSA-RD_PP14-Pp19.dwg, 2/23/2006 2:04:15 PM, \\LVG-PS1\hp5500-survey-pcl



PLAN - BOLSA DRIVE
SCALE: HORIZ 1"=40'



PROFILE - BOLSA DRIVE
SCALE: HORIZ 1"=40'
VERT 1"=4'



KEYMAP
NOT TO SCALE

NORTH

APPROVED FOR CONSTRUCTION
MAR 3 0 2006
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig
1-800-227-2600

Call before you Overhead
1-702-227-2929

BASIS OF BEARINGS

NORTH 00°13'07" EAST – THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 22, TOWNSHIP 31 NORTH, RANGE 16 WEST, G.&S. & SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (A2003–HM), WEST ZONE, INTERNATIONAL FOOT, UTILIZING FAST STATIC OBSERVATIONS PROCESSED BY NGS–OPUS.

M.C.S.D. "30 32" = LATITUDE 35°08'22.7003"N, LONGITUDE 114°09'31.5724"W (NAD '83) HEIGHT 2582.453(FT) (NAVD'88)

M.C.S.D. "30 30" = LATITUDE 35°08'24.4000"N, LONGITUDE 114°09'28.0000"W (NAD '83) HEIGHT 2486.594(FT) (NAVD'88)

BED COR 26/35/34/27 = LATITUDE 35°07'13.5276"N, LONGITUDE 114°09'06.6543"W (NAD '83) HEIGHT 2305.44(FT) (NAVD'88)

BENCHMARK

BENCHMARK # 7427 5" M.C.S.D.
ELEVATION= 2582.(FT) (NAVD '88)

DESCRIPTION: 1 1/2" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 1988 "MJ3 10347", LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE:
REFER TO M.A.G. STANDARD DWG. # 302 FOR D.I.P. JOINT RESTRAINTS

NOT FOR CONSTRUCTION

PRELIMINARY

SCALE (H) 1"=40'
SCALE (V) 1"=4'
DRAWN BY DMS
CHECKED BY D.L.
DATE 11/22/05

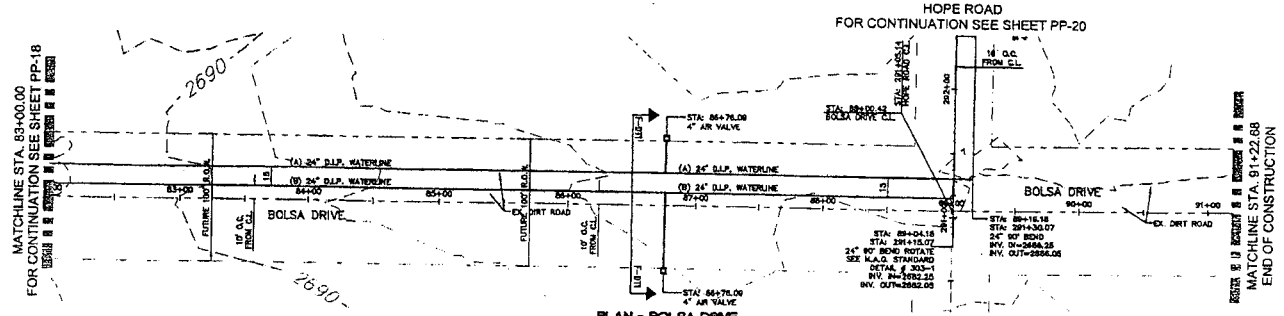
Stanley Consultants INC.

RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH
OFFSITE WATER TRANSMISSION LINE – BOLSA DR.
PLAN AND PROFILE – STA. 72+00.00 – 82+00.00
MOHAVE COUNTY ARIZONA

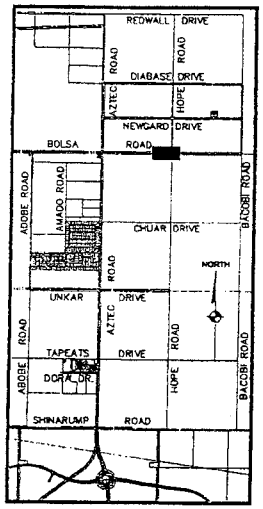
SHEET
PP-18
20 OF 31 SHEETS

SSI PROJECT
18446.07.04

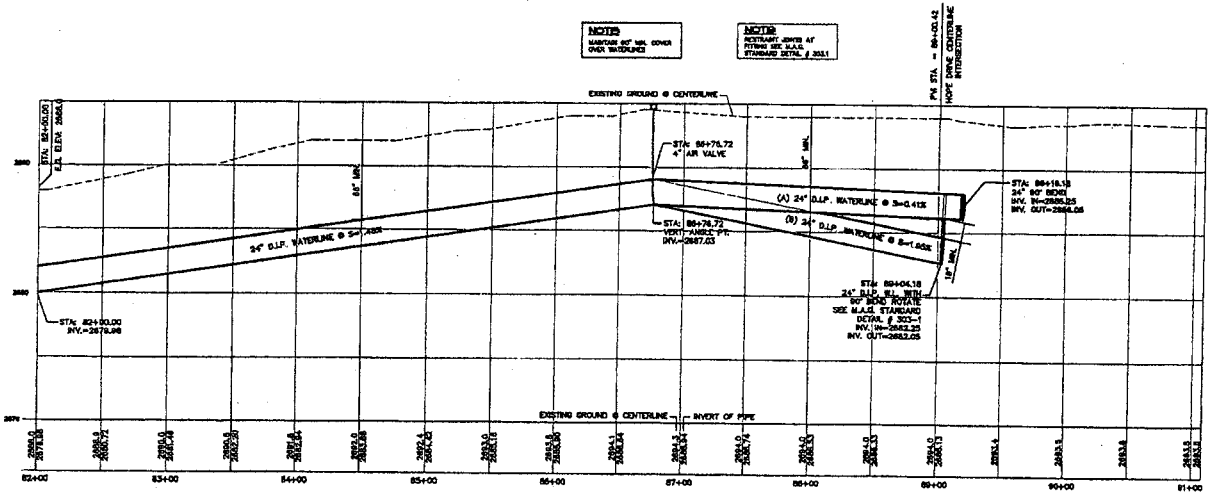
C:\18419\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\BOLSA-RD_PP14-Pp19.dwg, 2/23/2006 2:04:41 PM, \\LVG-PS1\hp5500-survey-pcl



PLAN - BOLSA DRIVE
SCALED HORIZ 1"=40'



KEYMAP
NOT TO SCALE



PROFILE - BOLSA DRIVE
SCALE: HORIZ 1"=40'
VERT 1"=4'

NOTE:
MAINTAIN 60" MIN. COVER OVER WATERLINES

NOTE:
RESTRAINT JOINTS AT FITTINGS SEE M.A.G. STANDARD DETAIL # 303.1

APPROVED FOR CONSTRUCTION
MAR 30 2006

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig 1-800-227-2600

Call before you Overhead 1-702-227-2928

BASIS OF BEARINGS

NORTH 00°12'40" EAST - THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 30, TOWNSHIP 31 NORTH, RANGE 10 WEST, G&S & SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (2003-10?), WEST ZONE, INTERNATIONAL FOOT, UTILIZING THAT STATIC OBSERVATIONS PROCESSED BY NGS-OPUS.

N.G.S.S. "30 20" = LATITUDE 35°09'32.7?????N, LONGITUDE 114°07'21.8?24?W (NAD '83) HEIGHT 2?0?.?????? (NAVD'88)

N.G.S.S. "30 28" = LATITUDE 35°09'32.4?????N, LONGITUDE 114°07'08.5?3?W (NAD '83) HEIGHT 2?0?.?????? (NAVD'88)

SEE OCR 36/35/34/27 = LATITUDE 35°09'?4.1?7?4?N, LONGITUDE 114°07'08.4?4?4"W (NAD '83) HEIGHT 2?0?.?????? (NAVD'88)

BENCHMARK

BENCHMARK # "A22 8" N.G.S.S.
ELEVATION= ??????? (NAVD '88)

DESCRIPTION: 1 1/2" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 1996 "MLS 13?4?", LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE:
REFER TO M.A.G. STANDARD DWG. # 302 FOR D.I.P. JOINT RESTRAINTS

NOT FOR CONSTRUCTION

PRELIMINARY

SCALE (H) 1"=40'
SCALE (V) 1"=4'
DRAWN BY DLG
CHECKED BY DLA
DATE 11/22/05

Stanley Consultants INC.

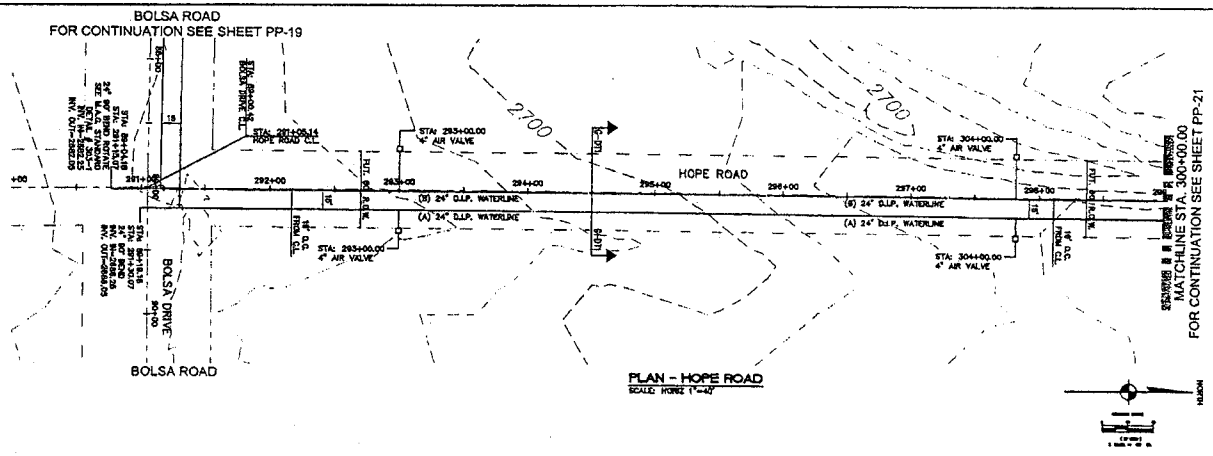
RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH

OFFSITE WATER TRANSMISSION LINE - BOLSA DR.
PLAN AND PROFILE - STA. 82+00.00 - 91+22.68
MOHAVE COUNTY ARIZONA

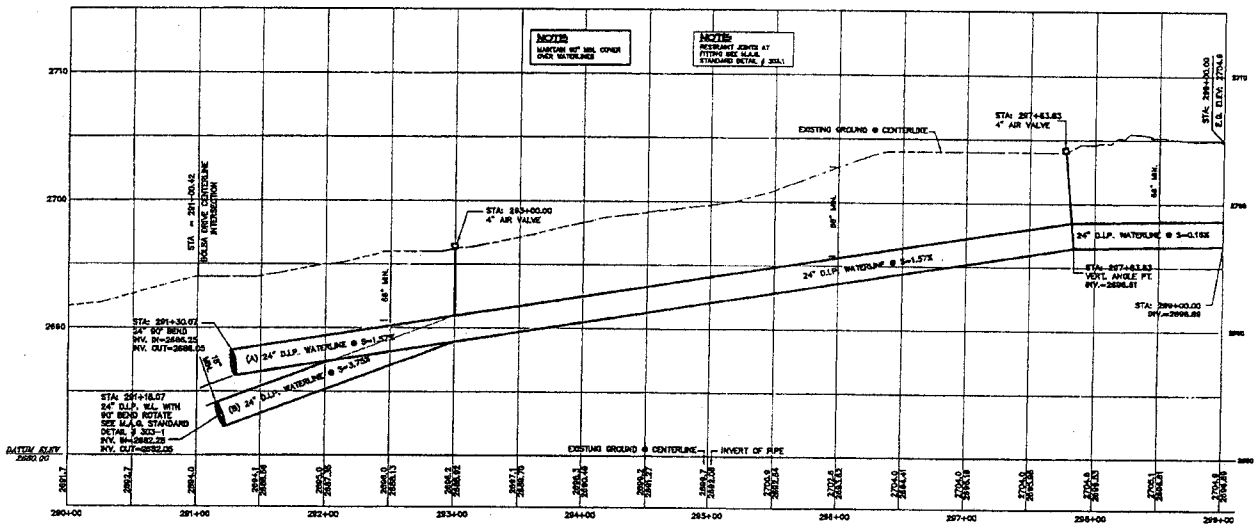
SHEET
PP-19
21 OF 31 SHEETS

SC PROJECT#
18440.07.04

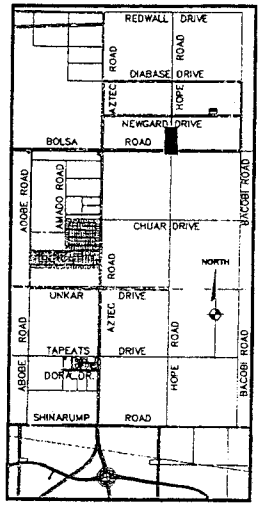
C:\18119\dwg\AZTEC-RD-EXTENSION\imp-Plans 30%\Ph1\BOLSA-RD_PP14-Pp19.dwg, 2/23/2006 2:05:06 PM, \\LVG-PS1\hp5500-survey-pcl



PLAN - HOPE ROAD
SCALE: HORIZ 1"=40'



PROFILE - HOPE ROAD
SCALE: HORIZ 1"=40'
VERT 1"=4'



KEYMAP
NOT TO SCALE

APPROVED FOR CONSTRUCTION
MAR 3 0 2006

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig
1-800-227-2600

Call before you Overhead
1-702-227-7229

BASIS OF BEARINGS

NORTH 00°15'47" EAST – THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 27, TOWNSHIP 27 NORTH, RANGE 18 WEST, GILA & SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (ARIZ-W83), WEST ZONE, INTERNATIONAL FOOT, UTILIZING FAST STATIC OBSERVATIONS PROCESSED BY NGS-OPUS.

M.C.S.D. "29 33" = LATITUDE 35°09'32.70054"N, LONGITUDE 114°08'35.87240"W (NAD '83) HEIGHT 3995.46(NAVD 88) (NAVD'88)

M.C.S.D. "RD 38" = LATITUDE 35°09'32.64352"N, LONGITUDE 114°07'38.50309"W (NAD '83) HEIGHT 3945.28(NAVD 88) (NAVD'88)

SEC. COR 22/26/34/27 = LATITUDE 35°10'13.19784"N, LONGITUDE 114°07'38.03848"W (NAD '83) HEIGHT 3908.63(NAVD 88) (NAVD'88)

BENCHMARK

BENCHMARK # "427 8" M.C.S.D.
ELEVATION= 3992.04-88 (NAVD '88)

DESCRIPTION: 1 1/2" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 1986 "MLS 16340", LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE:
REFER TO M.A.G. STANDARD DWG. # 302 FOR D.I.P. JOINT RESTRAINTS

NOT FOR CONSTRUCTION
PRELIMINARY

SCALE (H) 1"=40'
SCALE (V) 1"=4'
DRAWN BY BAD
CHECKED BY BLA
DATE 11/22/05

Stanley Consultants INC.

RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH

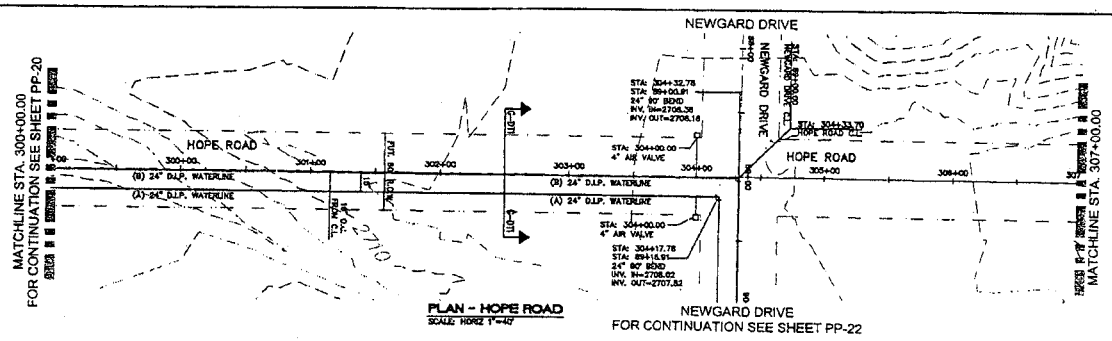
OFFSITE WATER TRANSMISSION LINE – HOPE RD.
PLAN AND PROFILE – STA. 290+00.00 – 299+00.00

MOHAVE COUNTY ARIZONA

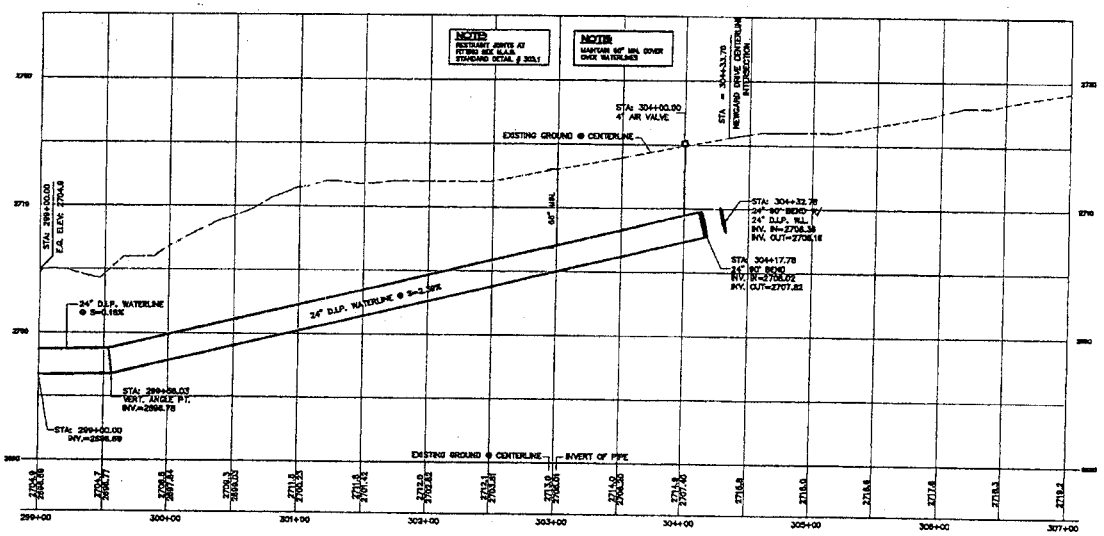
SHEET
PP-20
22 OF 31 SHEETS

SCI PROJECT/
18446.07.04

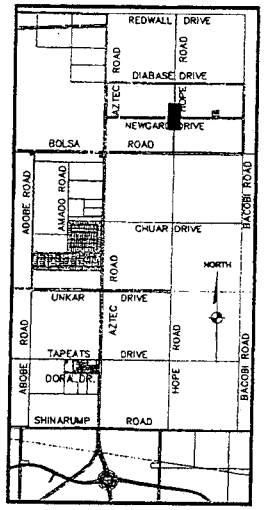
C:\15119\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\HOPE-RD_PP20-PP21.dwg, 2/23/2006 2:07:52 PM, \\LVG-PS1\hp5500-survey-pcl



PLAN - HOPE ROAD
SCALE: HORIZ 1"=40'



PROFILE - HOPE ROAD
SCALE: HORIZ 1"=40'
VERT 1"=4'



KEYMAP
NOT TO SCALE

APPROVED FOR CONSTRUCTION
MAR 3 0 2006
MOHAVE COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE OWNER/ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Arizona law requires you to notify Blue Stake, Inc. (Arizona Blue Stake) at least two full business days before you dig.
Call before you Dig
1-800-327-2900
Arizona Blue Stake

Nevada requires you to notify Nevada Underground Protection Service at least two full business days before you dig.
Call before you Overhead
1-702-217-2929
Nevada Underground Protection Service

BASIS OF BEARINGS

NORTH 89°52'57" EAST – THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 27, TOWNSHIP 21 NORTH, RANGE 19 WEST, G&S & SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (ACS0-83), WEST ZONE, INTERNATIONAL FOOT, UTILIZING FAST STATIC OBSERVATIONS PROCESSED BY NGS-OPUS.

M.C.S.D. "BO 26" = LATITUDE 35°06'32.70836"N, LONGITUDE 114°09'31.57944"W (NAD '83) HEIGHT 2696.49(NAVD) (NAVD'88)

M.C.S.D. "BO 28" = LATITUDE 35°06'32.41021"N, LONGITUDE 114°09'36.85209"W (NAD '83) HEIGHT 2696.25(NAVD) (NAVD'88)

SEC COR 26/35/34/27 = LATITUDE 35°06'18.15794"N, LONGITUDE 114°09'36.55248"W (NAD '83) HEIGHT 2696.55(NAVD) (NAVD'88)

BENCHMARK

BENCHMARK # "247 8" M.C.S.D.
ELEVATION 2692.04FT (NAVD '88)

DESCRIPTION: 1 1/2" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 1996 "MLS 13340", LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE
REFER TO M.A.G. STANDARD DWG. # 302 FOR D.I.P. JOINT RESTRAINTS

NOT FOR CONSTRUCTION
PRELIMINARY

SCALE HZ 1"=40'
SCALE (V) 1"=4'
DRAWN BY DJG
CHECKED BY RJA
DATE 11/22/05

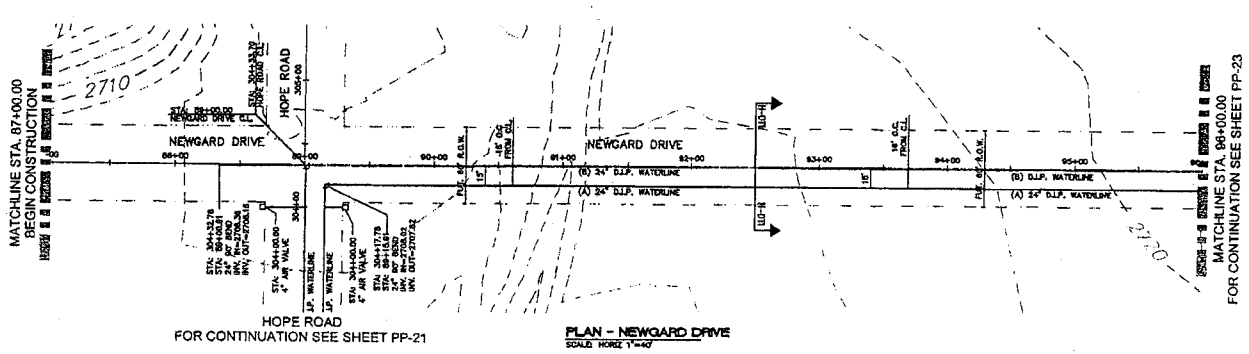
Stanley Consultants INC.
525 S. Gordon, Suite 200
P.O. Box 1000
Flagstaff, AZ 86002
(928) 526-4295 Fax (928) 526-1293
www.stanleyeng.com

RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH
OFFSITE WATER TRANSMISSION LINE - HOPE RD.
PLAN AND PROFILE - STA. 299+00.00 - 307+00.00
MOHAVE COUNTY ARIZONA

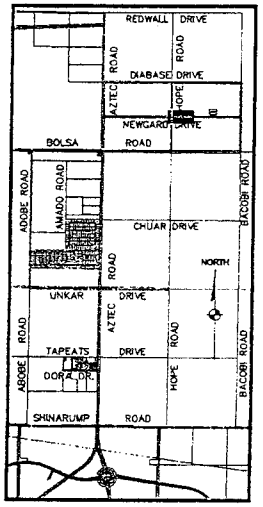
SHEET
PP-21
23 OF 31 SHEETS

SC PROJECT #
184448.07.04

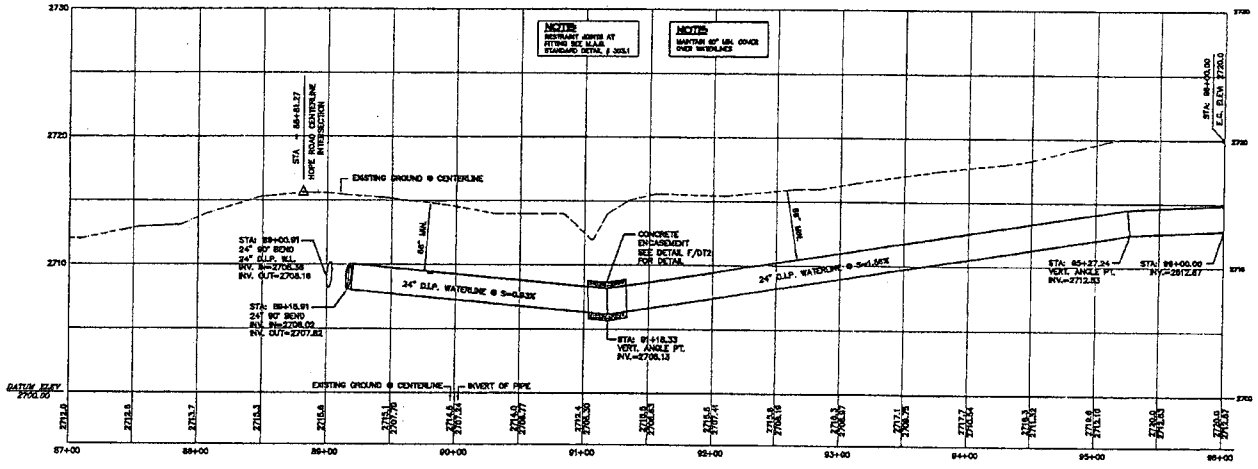
C:\PROJ\19\dwg\AZTEC-RD-EXTENSION\lmp-Plans 30%\PH1\HOPE-RD_PP20-PP21.dwg, 2/23/2006 2:09:05 PM, \\LVG-PS1\hp5500-survey-pcl



PLAN - NEWGARD DRIVE
SCALE: HORIZ 1"=40'



KEYMAP
NOT TO SCALE



PROFILE - NEWGARD DRIVE
SCALE: HORIZ 1"=40'
VERT 1"=4'

APPROVED FOR CONSTRUCTION
MAR 3 0 2006
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig 1-800-277-2860

Call before you Overhead 1-702-277-2929

BASIS OF BEARINGS

NORTH 00°04'40" EAST — THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 27, TOWNSHIP 21 NORTH, RANGE 18 WEST, G&S & SRLT RIVER BASEMAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (A2SS—WF), WEST ZONE, INTERNATIONAL FOOT, UTILIZING FAST STATIC OBSERVATIONS PROCESSED BY NGS—OPUS.

M.C.S.A. "30 30" = LATITUDE 35°06'22.70333N(),
LONGITUDE 114°09'35.87240"W (NAD '83)
HEIGHT 2646.46363ft (NAVD'88)

M.C.S.A. "30 38" = LATITUDE 35°06'22.43033N(),
LONGITUDE 114°10'06.36330"W (NAD '83)
HEIGHT 2646.56624ft (NAVD'88)

SEC COR 26/35/34/27 = LATITUDE 35°06'13.10794N(),
LONGITUDE 114°10'38.03016"W (NAD '83)
HEIGHT 2646.66338ft (NAVD'88)

BENCHMARK

BENCHMARK # "AST 8" M.C.S.A.
ELEVATION: 2662.04ft (NAVD '88)

DESCRIPTION: 1 1/2" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 1988 "ELE 2662.4", LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE:
REFER TO M.A.G. STANDARD DWG # 302 FOR D.I.P. JOINT RESTRAINTS

NOT FOR CONSTRUCTION

PRELIMINARY

SCALE (H) 1"=40'
SCALE (V) 1"=4'
DRAWN BY DAG
CHECKED BY DLA
DATE 11/22/05

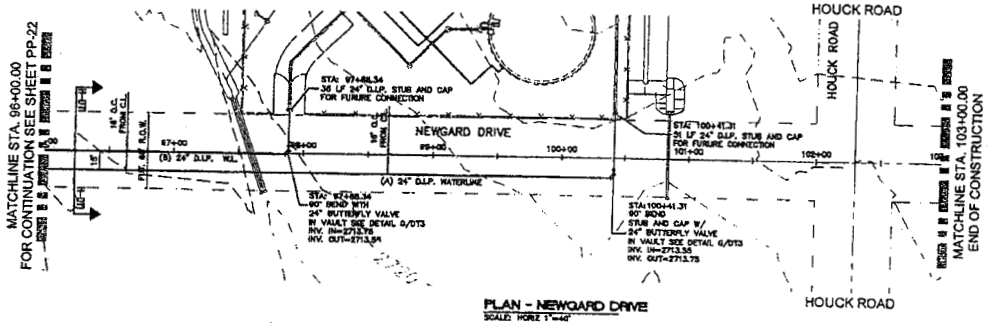
Stanley Consultants INC.

RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH
OFFSITE WATER TRANSMISSION LINE - NEWGARD DR.
PLAN AND PROFILE - STA. 87+00.00 - 96+00.00
MOHAVE COUNTY ARIZONA

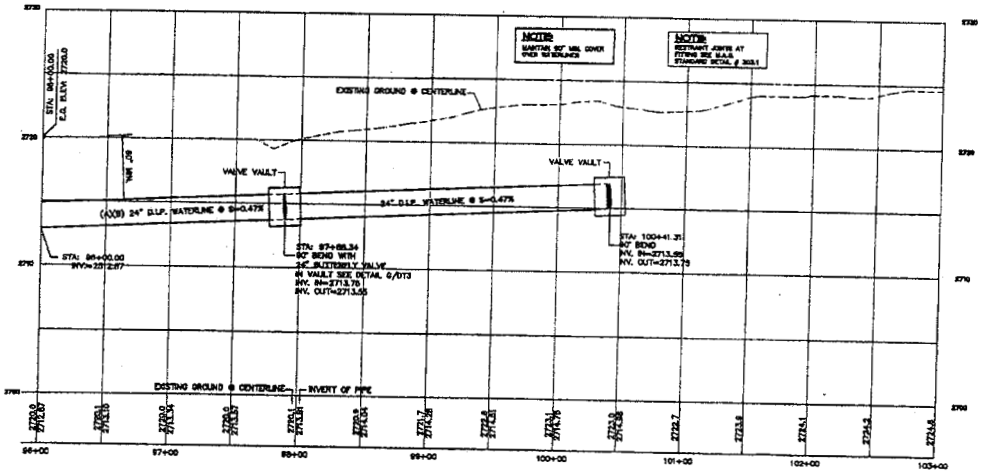
SHEET
PP-22
24 OF 31 SHEETS

SCI PROJECT #
10-449.07.04

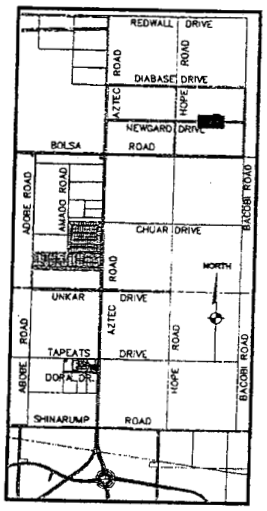
C:\1R419\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\NEWGARD DR_PP22-PP23.dwg, 2/23/2006 2:11:13 PM, \\LVG-PS1\hp5500-survey-pcl



PLAN - NEWGARD DRIVE
SCALE: HORIZ 1"=40'



PROFILE - NEWGARD DRIVE
SCALE: HORIZ 1"=40'
VERT 1"=4'



KEYMAP
NOT TO SCALE

APPROVED FOR CONSTRUCTION
MAR 3 0 2006
MOHAVE COUNTY

NOT FOR CONSTRUCTION
PRELIMINARY

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig
1-800-327-2600

Call before you Overhead
1-702-127-2929

BASIS OF BEARINGS

NORTH 00°13'47" EAST — THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 22, TOWNSHIP 20 NORTH, RANGE 19 WEST, GILA & SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (ACS-83) DERIVED FROM INTERNATIONAL FOOT, US SURVEY FOOT GRID DIMENSIONS PROCEEDED BY 999-GPS.

M.A.G.S. "20 22" = LATITUDE 35°09'22.7023"N. LONGITUDE 114°00'35.5279"W (NAD '83) HEIGHT 3662.4630M (NAVD'88)

M.A.G.S. "20 28" = LATITUDE 35°09'28.4003"N. LONGITUDE 114°00'38.6630"W (NAD '83) HEIGHT 3666.8000M (NAVD'88)

MEC DGN 20/28/24/27 = LATITUDE 35°07'53.9796"N. LONGITUDE 114°01'08.0004"W (NAD '83) HEIGHT 3605.6600M (NAVD'88)

BENCHMARK

BENCHMARK # "A27 8" M.A.G.S.
ELEVATION= 3662.8140 (NAVD '88)

DESCRIPTION: 1 1/2" ALUMINUM CAP IN SCHORTE STAMP MOHAVE COUNTY 1989 "B.S. 10/24/0", LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

NOTE
REFER TO M.A.G. STANDARD DWG. # 302 FOR D.I.P. JOINT RESTRAINTS

SCALE HZ 1"=40'
SCALE VT 1"=4'
DRAWN BY DMB
CHECKED BY S.A.
DATE 11/23/05

Stanley Consultants INC.
555 E. Cedar Avenue, Suite 200
Las Vegas, Nevada 89119
(702) 369-1767
www.stanleyconsultants.com

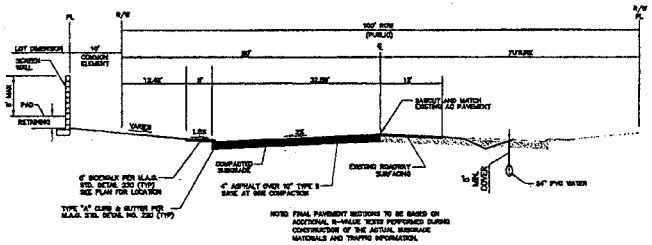
RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH

OFFSITE WATER TRANSMISSION LINE - NEWGARD DR.
PLAN AND PROFILE - STA. 96+00.00 - 103+00.00
MOHAVE COUNTY ARIZONA

SHEET
PP-23
23 OF 31 SHEETS

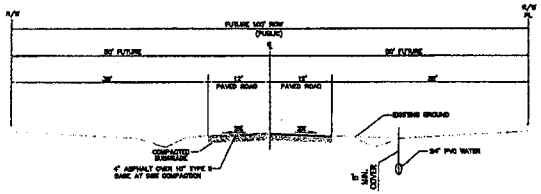
SGI PROJECT #
15448.07.04

C:\pw-work\19\dwg\AZTEC-RD-EXTENSION\imp-Plans 30%\PH1\NEWGARD DR_PP22-PP23.dwg, 2/23/2006 2:12:02 PM, \\LVG-PS1\hp5500-survey-pcl

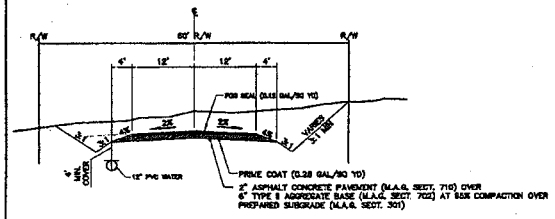


A DT1 TYPICAL 100' RIGHT-OF-WAY HALF STREET SECTION
PUBLIC AZTEC ROAD
N.T.S.

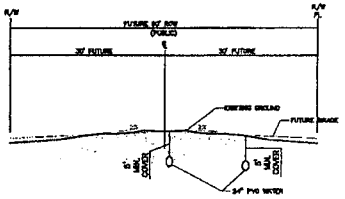
* AZTEC ROAD IMPROVEMENTS TO BE PART OF OFF-SITE ROADWAY IMPROVEMENT PACKAGE PREPARED BY STANLEY CONSULTANTS.



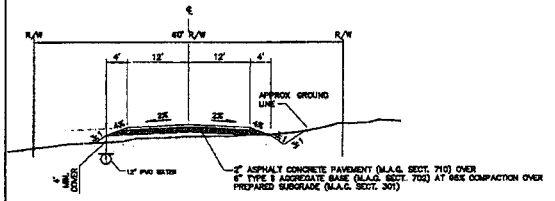
B DT1 AZTEC ROAD - ASPHALT SECTION
PUBLIC STREET
N.T.S.



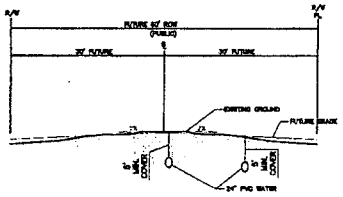
C DT1 DORA DRIVE - ASPHALT SECTION
PUBLIC STREET
N.T.S.



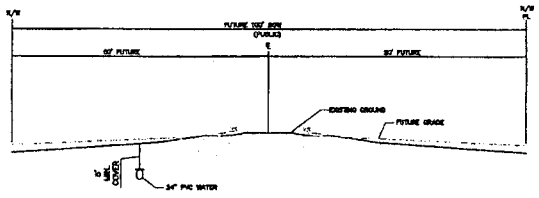
G DT1 HOPE ROAD - STREET SECTION
PUBLIC STREET
N.T.S.



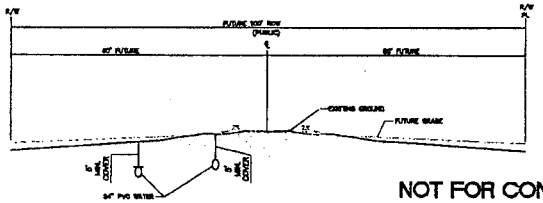
D DT1 DORA DRIVE - GRAVEL SECTION
PUBLIC STREET
N.T.S.



H DT1 NEWGARD DRIVE - STREET SECTION
PUBLIC STREET
N.T.S.



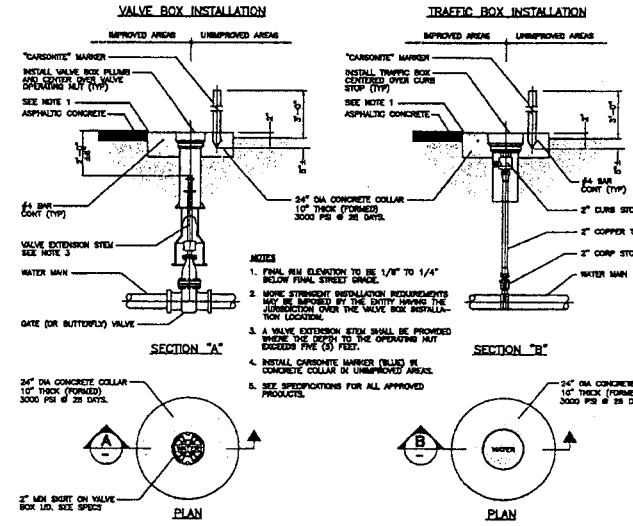
E DT1 BOLSA DRIVE - STREET SECTION
PUBLIC STREET
N.T.S.



F DT1 BOLSA DRIVE - STREET SECTION
PUBLIC STREET
N.T.S.

NOT FOR CONSTRUCTION

PRELIMINARY



NOTES

1. FINAL RIM ELEVATION TO BE 1/8" TO 1/4" BELOW FINAL STREET GRADE.
2. MORE STRINGENT INSTALLATION REQUIREMENTS MAY BE IMPOSED BY THE ENTITY HAVING THE JURISDICTION OVER THE VALVE BOX INSTALLATION LOCATION.
3. A VALVE EXTENSION STEM SHALL BE PROVIDED WHERE THE DEPTH TO THE OPERATING NUT EXCEEDS FIVE (5) FEET.
4. INSTALL CARSONITE MARKER (BLUE) IN CONCRETE COLLAR ON UNIMPROVED AREAS.
5. SEE SPECIFICATIONS FOR ALL APPROVED PRODUCTS.

VALVE BOX AND TRAFFIC BOX INSTALLATION
NOT TO SCALE PL10-6 012600 DT1

SCALE (H) 1" = 10'
SCALE (V) N.T.S.
DRAWN BY DAS
CHECKED BY DJL
DATE 11/22/05

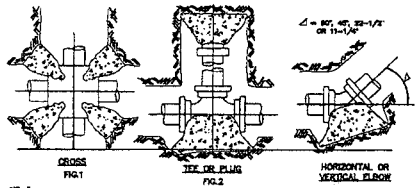
Stanley Consultants INC.
3020 S. Eastern Avenue, Suite 200
Las Vegas, Nevada 89169
Tel (702) 369-4700 Fax (702) 369-4703
www.stanleyengineers.com

RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH
OFFSITE WATER TRANSMISSION LINE
STREET SECTION DETAIL
MOHAVE COUNTY ARIZONA

SHEET
DT-1
28 OF 31 SHEETS

SCI PROJECT NO.
18449.07.04

Q:\18449\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\AZTEC-RD-EXT_DETAILS.dwg, 2/24/2006 9:55:19 AM, \\LVC-PS1\hp5500-survey-pcl

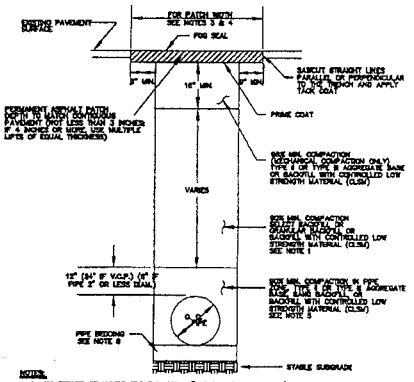


NOTES:

1. ALL FITTINGS AND EXPOSED REBAR TO BE COATED WITH EC 244 AND WRAPPED WITH TWO LAYERS OF 8 MIL. POLYETHYLENE.
2. TABLE BELOW INDICTES MINIMUM BEARING AREA OR VOLUME OF THRUST BLOCK. SPECIAL DESIGN FOR EACH INSTALLATION IS REQUIRED IF ALLOWABLE SOIL BEARING CAPACITY IS LESS THAN 3000 P.S.F.
3. PLACE CONCRETE AGAINST UNDISTURBED EARTH.
4. VERTICAL SURFACES NOT BEARING AGAINST UNDISTURBED EARTH SHALL BE FORMED.

SIZE OF PIPE	MINIMUM BEARING AREA IN SQUARE FOOT/CUBIC YARDS OF CONCRETE FIG. 1/FIG. 2			FIG. 3			FIG. 4		
		90°	45°	22-1/2°	11-1/4°	45°	22-1/2°	11-1/4°
4"		1	2			1.0	.5	.5
6"	2	3	3	2	1	1.5	1.0	.5
8"	2	5	6	3	2	3.0	1.0	.5
10"	3	7	10	8	3	4.0	2.0	1.0
12"	3	10	14	8	4	3		
14"	4	14	20	10	6	3		
16"	4	20	24	12	7	4		
18"	6	24	30	16	10	5		
20"	6	30	40	20	12	6		

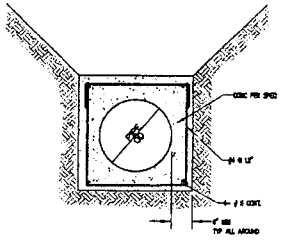
(A D12) THRUST BLOCK DETAILS
PUBLIC STREET
N.T.S.



NOTES:

1. NO STONES OR LUMPS GREATER THAN 3" PERMITTED IN TRENCH 6" OR LESS IN WIDTH.
2. IF SAWCUT IS WITHIN THREE FEET OF EDGE OF EXISTING ASPHALT CONCRETE SURFACE OR OTHER PATCH, REMOVE EXISTING PAVEMENT TO THAT EDGE AND REPLACE ENTIRE SECTION.
3. PATCHES SHALL BE WIDTH (4 FEET MINIMUM) SUFFICIENT TO ACCOMMODATE MECHANICAL PLACEMENT USING AGENCY APPROVED SPREADER BOX OR PAVING MACHINE, ROLLING AND COMPACTION PER UNIFORM STANDARD SPECIFICATION SECTION 401.03.11.
4. SAWCUTS SHALL BE PLACED IN THE WHEEL PATH AREA.
5. FOR CONDUIT TRENCHES 8 INCHES WIDE OR LESS WITHIN 5 FEET OF THE CURB, PATCHES SHALL EXTEND A MINIMUM OF 4 FEET (TRIM 12" OF GUTTER AND PAVEMENT SHALL BE REMOVED TO CURB AND GUTTER WIDTH SHALL BE SUFFICIENT TO ACCOMMODATE MINIMUM PLACEMENT USING AGENCY APPROVED SPREADER BOX OR PAVING MACHINE, ROLLING AND COMPACTION PER UNIFORM STANDARD SPECIFICATION SECTION 401.03.11. SAWCUT SHALL NOT BE PLACED IN WHEEL PATH AREA.
3. TRENCH WIDTH, BEDDING, SUBGRADE AND PIPE ZONE REQUIREMENTS FOR UTILITY INSTALLATIONS SHALL CONFORM TO THE RESPECTIVE AGENCY REQUIREMENTS.
6. CRUSHED ROCK MAY BE USED FOR PIPE BEDDING ONLY IF MATERIAL USE HAS BEEN SPECIFICALLY APPROVED BY THE GOVERNING AGENCY. SEE STANDARD DRAWING NO. 505 FOR PIPE BEDDING METHODS.
7. LAS VEGAS VALLEY WATER DISTRICT REQUIRES PIPE BEDDING AND BACKFILL WITHIN THE PIPE ZONE TO BE OF THE SAME MATERIAL.

(C D12) TRENCH BACKFILL DETAIL
PUBLIC STREET
N.T.S.



(E D12) CONCRETE ENCASEMENT DETAIL
N.T.S.

NOT FOR CONSTRUCTION

PRELIMINARY

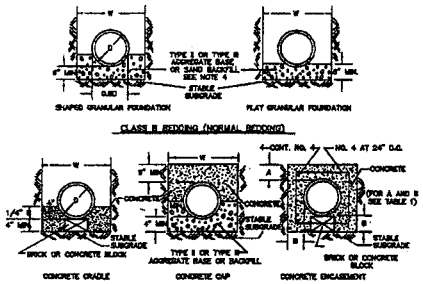


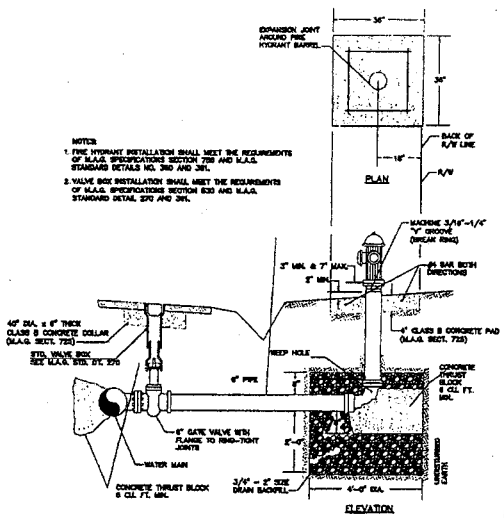
TABLE 1					
PIPE SIZE	B	A	PIPE SIZE	B	A
4"	3"	4"	30"	9"	9"
6"	3"	4"	32"	9"	9"
8"	3"	4"	34"	9"	9"
10"	3"	4"	36"	9"	9"
12"	3"	4"	42"	9"	9"
14"	3"	4"	48"	9"	9"
16"	3"	4"	54"	9"	9"
18"	3"	4"	60"	9"	9"
21"	3"	9"	42"	10"	9"

D = OUTSIDE DIAMETER OF PIPE
W = OUTSIDE DIAMETER OF PIPE + 24" MAXIMUM

NOTES:

1. PIPE BEDDING TO BE COMPACTED TO AT LEAST 90% OF MAXIMUM DENSITY. SUBGRADE SHALL CONFORM TO RESPECTIVE ENTITY REQUIREMENTS.
2. INDICATED THICKNESS OF BEDDING MATERIAL TO BE CONSTRUCTED UNDER THE BARREL. SUBGRADE TO BE EXCAVATED TO PROVIDE 9" CLEARANCE UNDER THE BELL.
3. OTHER BEDDING METHODS MAY BE SPECIFIED OR APPROVED.
4. CRUSHED ROCK MAY BE USED FOR PIPE BEDDING ONLY IF MATERIAL USE HAS BEEN SPECIFICALLY APPROVED BY THE GOVERNING AGENCY.

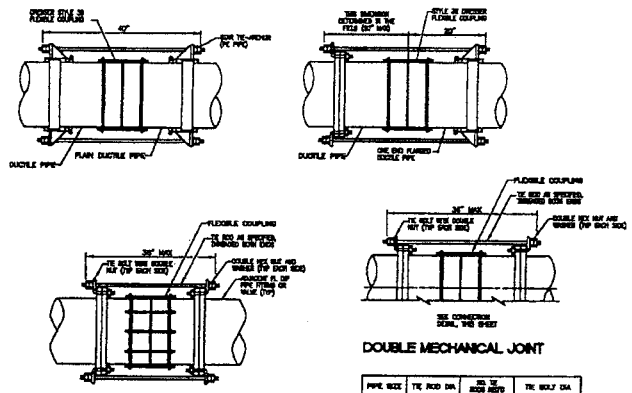
(B D12) PIPE TRENCH BEDDING METHODS
PUBLIC STREET
N.T.S.



NOTES:

1. FIRE HYDRANT INSTALLATION SHALL MEET THE REQUIREMENTS OF M.A.G. SPECIFICATIONS SECTION 709 AND M.A.G. STANDARD DETAILS NO. 360 AND 361.
2. VALVE BOX INSTALLATION SHALL MEET THE REQUIREMENTS OF M.A.G. SPECIFICATIONS SECTION 630 AND M.A.G. STANDARD DETAIL 270 AND 361.

(D D12) FIRE HYDRANT ASSEMBLY DETAIL
PUBLIC STREET
N.T.S.



FLEXIBLE COUPLING DETAIL - A-P12 (F D12)
NOT TO SCALE

DOUBLE MECHANICAL JOINT

PIPE SIZE	TIE ROD DIA.	NO. OF RODS REQ'D	TIE BOLT DIA
8"	1"	2	1"
10"	1"	4	1"
12"	1"	4	1"
14"	1"	4	1"
16"	1"	4	1"
18"	1"	6	1"
24"	1"	10	1"
36"	1"	20	1"

NOTES:

1. PROVIDE TIE RODS WHERE FLEXIBLE COUPLING RESTRAINTS ARE SPECIFIED AND AT ALL OTHER LOCATIONS REQUIRED ON THE DRAWINGS.
2. CHECK AND SPACE TIE RODS AS REQUIRED TO EXCEED MINIMUM PIPE PRESSURE

SCALE (V) N.T.S.
SCALE (H) N.T.S.
DRAWN BY DJG
CHECKED BY DJA
DATE 11/22/05

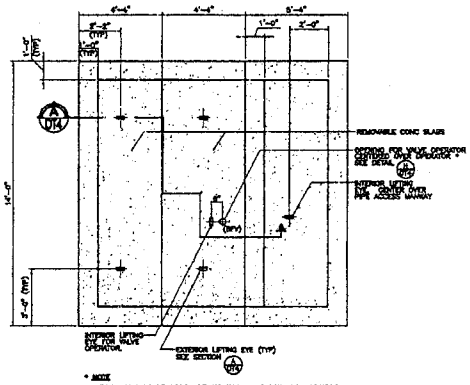
Stanley Consultants INC.

RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH
OFFSITE WATER TRANSMISSION LINE
DETAIL SECTION
MOHAVE COUNTY ARIZONA

SHEET
DT-2
27 OF 31 SHEETS

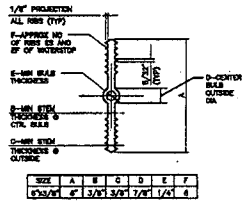
SCI PROJECT
184-08-07-04

Q:\18449\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\AZTEC-RD-EXT_DETAILS.dwg, 2/24/2006 9:55:46 AM, \\LVG-PS1\hp5500-survey-pcl



* NOTE
ACTUAL LOCATION OF ROOF OPENING FOR VALVE BOX AND ACTUATOR OUTSIDE SHALL BE DETERMINED BY CONTRACTOR AT THE DIRECTION OF THE PROPERTY AND CONTRACTOR OF THE ACTUAL EQUIPMENT USED. SEE PROJECT CONTRACTOR'S SHOP DRAWINGS FOR ROOF DRAWING PRIOR TO POURING CONCRETE VAULT TOP SLAB.

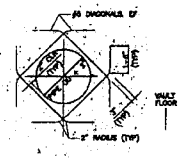
VALVE VAULT ROOF PLAN (A/DT3)
NOT TO SCALE PLG3-2 011201



SIZE	A	B	C	D	E	F
6"x3/8"	6"	3/8"	3/8"	7/8"	1/4"	4

NOTES
1. MATERIAL QUALITY PER SPECIFICATIONS.
2. DIMENSION REQUIREMENTS INDICATED SHOULD BE GIVEN TO SUPPLIERS PRIOR TO PLACING ORDERS.
3. NON-ROUND CENTER BULBS SHALL HAVE A MIN OUTSIDE DIMENSION OF "D".

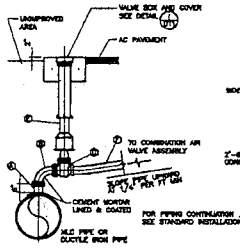
WATERSTOP DETAIL (B/DT3)
NOT TO SCALE PLG3-3 121099



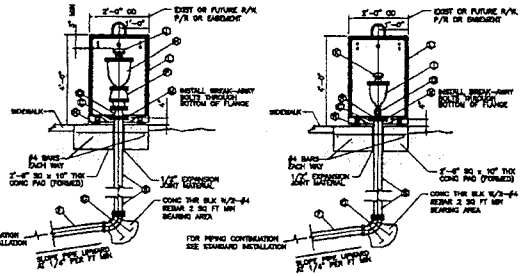
WALL OPENING - DIAGONAL REINFORCEMENT DETAIL (C/DT3)
NOT TO SCALE PLG3-4 022601

NOTES
1. CONCRETE FOR VAULT STRUCTURES SHALL BE 4000 PSI, UNLESS OTHERWISE SPECIFIED.
2. PIPE OUTLET SHALL BE SHAPED TO FIT THE SPECIFIED PIPE DIAMETER.
3. MAINTAIN A MIN CLEARANCE OF 2" OF COVER FOR REINFORCED STEEL, UNLESS OTHERWISE SPECIFIED.
4. BACKFILL LIMITS OF VAULT EXCAVATION (INCLUDING BELOW VAULT FLOOR) WITH TYPE II AGGREGATE BASE, COMPACT TO 95% OF MAX DENSITY, UNLESS OTHERWISE SPECIFIED.

DETAIL NOTES (D/DT3)
NOT TO SCALE PLG3-7 022601

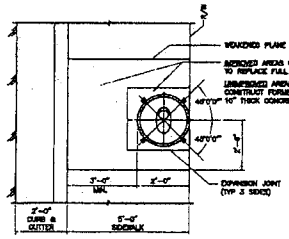


STANDARD INSTALLATION



3" OR 4" COMB AIR VALVE PROFILE

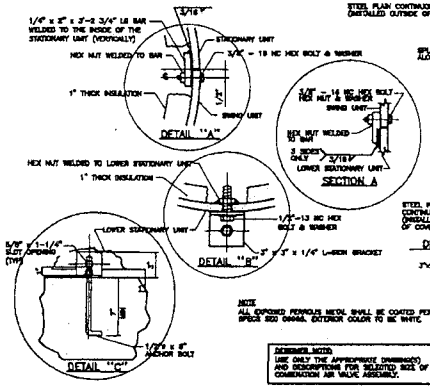
1" OR 2" COMB AIR VALVE PROFILE

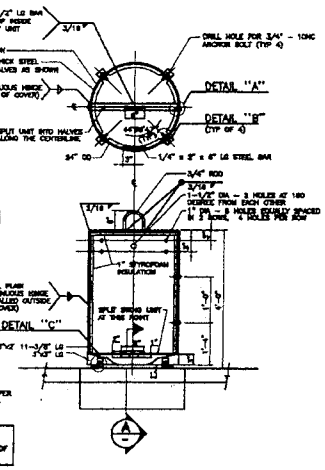


PLAN VIEW

LEGEND
1. 4" FLG STL OUTLET FOR MJ C STUFFIE, FLG TEE FOR DIP
2. 4"- 90° FLG DUCTILE IRON BEND
3. 4" DUCTILE IRON FLANGE ADAPTOR
4. 4" FLG x PO OR FLG x MJ GATE VALVE W/2" OPERATING NUT
5. VALVE BOX AND COVER - SEE DETAIL (H/DT3)
6. 4" DUCTILE IRON PC350 PIPE OR 4" PVC CL150 DR18 PIPE
7. 4" - 90° FLG x PO OR FLG x MJ CI BEND
8. 3" OR 4" COMBINATION AIR VALVE, FLANGED INLET
9. 1" OR 2" COMBINATION AIR VALVE, THREADED INLET
10. 3" OR 4" MUSHROOM VENT CAP
11. 1" OR 2" MUSHROOM VENT CAP
12. 2'-0" OD x 4'-0" HIGH STEEL COVER
13. 5/8"-11NC BREAK-AWAY ZINC PLATED HEX HD BOLT, HEX NUT AND LOCKWASHER
14. 1/2"Ø x 6" ANCHOR BOLT
15. 1" OR 2" CONF STOP, THREADED BOTH ENDS
16. 3" OR 4" BALL VALVE - QUARTER TURN - FOR 3" OR 4" COMB AIR VALVE ASSY
17. 4" x 3" FLG DUCTILE IRON REDUCER - FOR 3" COMB AIR VALVE ASSY
18. 4" x 2" OR 4" x 1" THREADED STL REDUCING FLANGE
19. 4" DUCTILE IRON PC350 PIPE

NOTE
SEE SPECIFICATIONS FOR ALL APPROVED PRODUCTS





NOTE
ALL EXPOSED FERROUS METAL SHALL BE COATED PER SPECS 600 SERIES. EXTERIOR COLOR TO BE WHITE.

DESIGNER NOTE
USE ONLY THE APPROPRIATE DIMENSIONS AND DESCRIPTIONS FOR SELECTED SIZE OF COMBINATION AIR VALVE ASSEMBLY.

COMBINATION AIR VALVE ASSEMBLY FOR 1", 2", 3", AND 4" VALVES (E/DT3)
NOT TO SCALE PLG8-1 031401

NOT FOR CONSTRUCTION

PRELIMINARY

SCALE (V) N.T.S.
SCALE (H) N.T.S.
DRAWN BY BJG
CHECKED BY G.A.
DATE 11/22/05

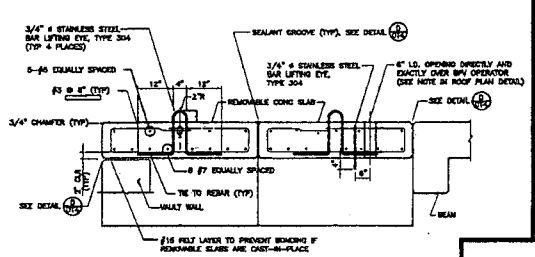
Stanley Consultants INC.
3200 E. Camelback Avenue, Suite 200
Phoenix, AZ 85018
(602) 385-1700 Fax (602) 385-1701
www.stanleyengr.com

RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH
OFFSITE WATER TRANSMISSION LINE
DETAIL SECTIN
MOHAVE COUNTY ARIZONA

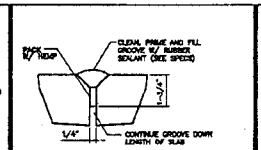
SHEET
DT-3
26 OF 38 SHEETS

SW PROJECT#
18449.07.04

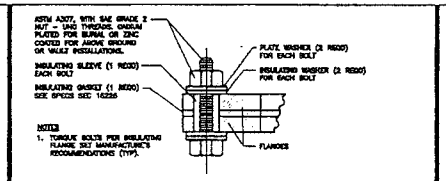
Q:\18449\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\AZTEC-RD-EXT_DETAILS.dwg, 2/24/2006 9:56:08 AM, \\LVG-PS1\hp5500-survey-pc1



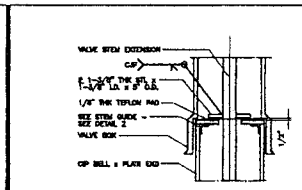
REMOVABLE CONCRETE SLAB SECTION (A / D14)
NOT TO SCALE PLDS-C 022501



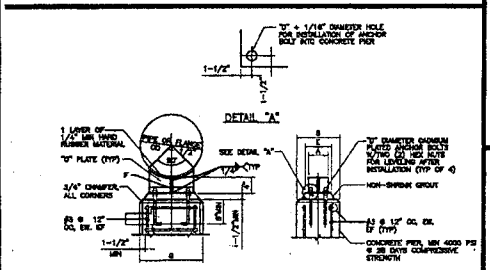
SEALANT GROOVE DETAIL (D / D14)
NOT TO SCALE



INSULATING FLANGE SET DETAIL (E / D14)
NOT TO SCALE



GUIDE PLATE – DETAIL 1

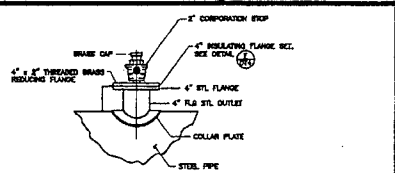


NOTE: GALVANIZE ASSEMBLY AFTER WELDING FABRICATION.

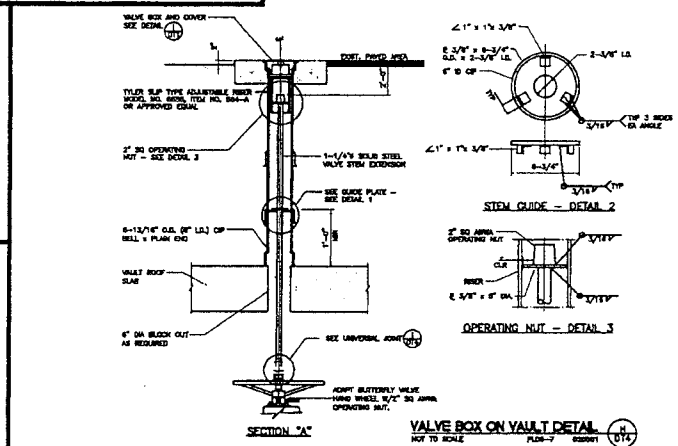
PIPE SUPPORT TABLE

NOMINAL PIPE SIZE	A	B	C	D	E	SUPPORTING STL CYL PIPE F	SUPPORTING STL CYL PIPE G	SUPPORTING FLANGE F	SUPPORTING FLANGE G
12"	4"	12"	3/8"	3/8"	6"	10"	14"	14"	18"
16"	4"	12"	3/8"	5/8"	6"	12"	16"	17"	21"
18"	4"	12"	3/8"	5/8"	6"	14"	18"	18"	22"
20"	4"	12"	3/8"	3/8"	6"	16"	20"	20"	24"
24"	4"	12"	3/8"	5/8"	6"	19"	23"	23"	27"
30"	5"	12"	3/8"	3/4"	6"	23"	29"	28"	34"
36"	6"	15"	3/8"	3/4"	6"	27"	33"	33"	39"
42"	6"	16"	1/2"	1"	6"	32"	38"	38"	44"
48"	6"	16"	1/2"	1"	6"	36"	42"	42"	48"
54"	6"	16"	1/2"	1"	6"	40"	46"	47"	53"
60"	6"	16"	1/2"	1"	6"	44"	50"	52"	58"
66"	6"	16"	1/2"	1"	6"	46"	54"	57"	65"
72"	6"	16"	1/2"	1"	6"	52"	58"	62"	68"

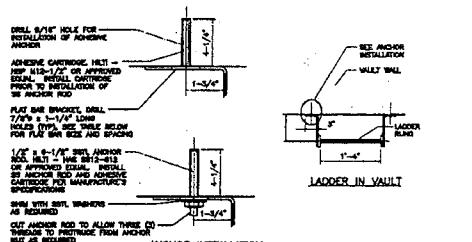
PIPE SUPPORT DETAIL (B / D14)
NOT TO SCALE



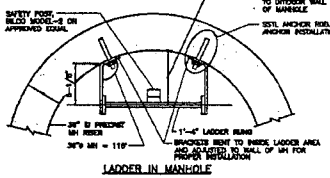
CORPORATION STOP DETAIL (F / D14)
NOT TO SCALE PLDS-6 020501



VALVE BOX ON VAULT DETAIL (H / D14)
NOT TO SCALE PLDS-7 020501



LADDER IN VAULT



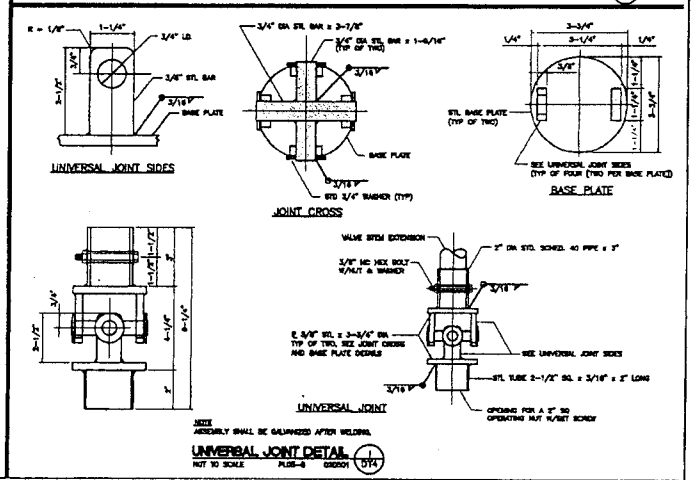
LADDER IN MANHOLE

BRACKET SPACING TABLE

BRACKET SPACING	FLAT BAR SIZE
6'-0" TO 20'-0" OC MAX	3" x 3/8"
OVER 20'-0"	4" x 1/2"

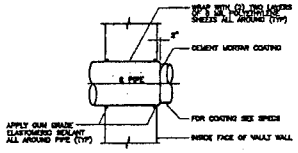
NOTES
1. LANDING PLATFORM REQUIRED EVERY 20'-0" OF HEIGHT OR FRACTION THEREOF FOR OPEN LADDER. FOR LADDER WITH CAGE, PLATFORM SPACING @ 30'-0" MAX (OSHA 1910.27).
2. APPROVAL OF THE ENGINEER REQUIRED FOR ANY BRACKET SPACING OVER 6'-0" OC (SEE BRACKET SPACING TABLE FOR BAR SIZE).
3. LADDER SHALL BE MADE OF MILD CARBON STEEL WITH 3/4"ø SMOOTH BAR RUNGS PLUG WELDED TO RUNNERS.
4. GALVANIZE LADDER ASSEMBLY AFTER WELDING.

LADDER INSTALLATION DETAILS (G / D14)
NOT TO SCALE PLDS-6 022501



NOTE
ASSEMBLY SHALL BE GALVANIZED AFTER WELDING.

UNIVERSAL JOINT DETAIL (I / D14)
NOT TO SCALE PLDS-6 020501



WALL PENETRATION DETAIL (C / D14)
NOT TO SCALE

Stanley Consultants INC.
3200 E. Camelback, Suite 350
Phoenix, AZ 85018
(602) 381-1391 Fax (602) 381-1393
www.stanleyconsultants.com

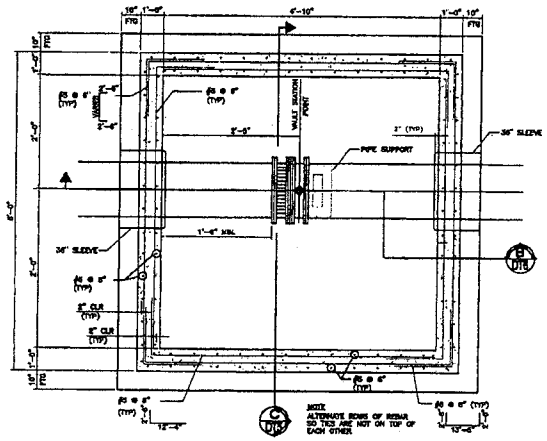
SCALE (H) N.T.S.
SCALE (V) N.T.S.
DRAWN BY EMO
CHECKED BY D.L.A.
DATE 11/30/06

PHOENIX HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH
OPPOSITE WATER TRANSMISSION LINE
DETAIL SECTION
MOHAVE COUNTY ARIZONA

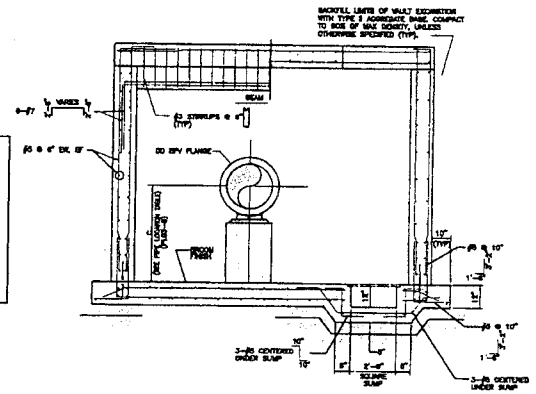
SHEET
DT-4
29 OF 31 SHEETS

SGI PROJECT #
19448.02.04

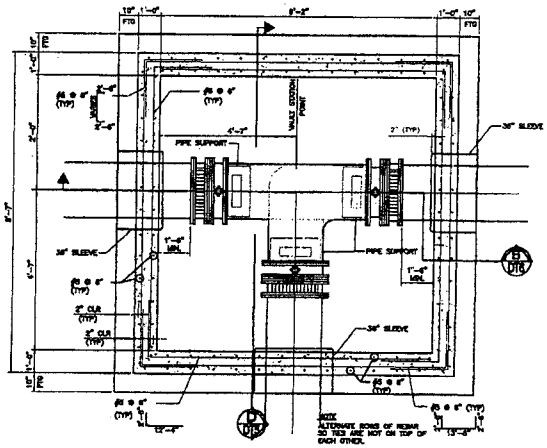
O:\18449\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\AZTEC-RD-EXT_DETAILS.dwg, 2/24/2006 9:56:32 AM, \\LVG-PS1\hp5500-survey-pcl



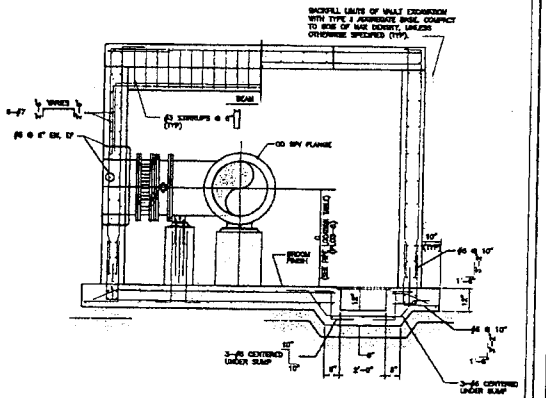
VALVE VAULT SECTIONAL PLAN
WITH (1) VALVE AND NO TEE
NOT TO SCALE



VALVE VAULT SECTION
WITH (1) VALVE AND NO TEE
NOT TO SCALE



VALVE VAULT SECTIONAL PLAN
WITH (3) VALVE AND TEE
NOT TO SCALE



VALVE VAULT SECTION
WITH (3) VALVE AND TEE
NOT TO SCALE

NOT FOR CONSTRUCTION

PRELIMINARY

SCALE (V) N.T.S.
SCALE (V) N.T.S.
DRAWN BY DAG
CHECKED BY DLA
DATE 11/22/05

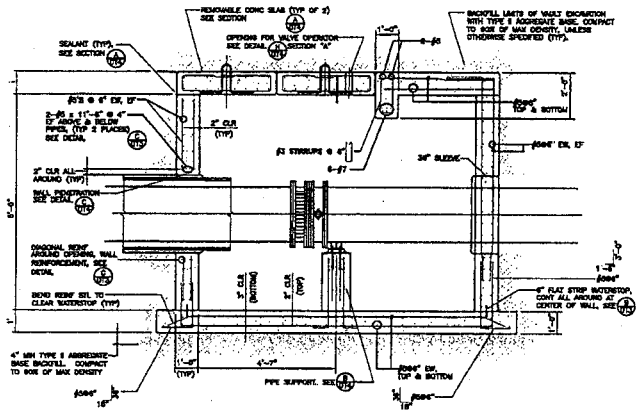
Stanley Consultants INC.

RI-ROCKIES HOLDER ARIZONA, LLC
GOLDEN VALLEY RANCH
OPPERTIN WATER TRANSMISSION LINE
DETAIL SECTIN
ARIZONA
MOHAVE COUNTY

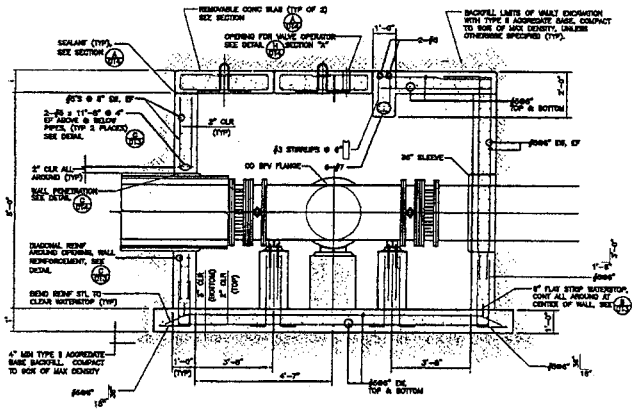
SHEET
DT-5
30 OF 31 SHEETS

SCI PROJECT #
184-05-07-04

Q:\18449\dwg\AZTEC-RD-EXTENSION\tmp-Plans 30%\PH1\AZTEC-RD-EXT_DETAILS.dwg, 2/24/2006 11:42:26 AM, \\LVG-PS1\hp5500-survey-pcl



VALVE VAULT SECTION
WITH (1) VALVE AND NO TEE
NOT TO SCALE



VALVE VAULT SECTION
WITH (3) VALVE AND TEE
NOT TO SCALE

NOT FOR CONSTRUCTION

PRELIMINARY

SCALE (H) N.T.S.
SCALE (V) N.T.S.
DRAWN BY SMO
CHECKED BY RLA
DATE 11/22/05

Stanley Consultants INC.

RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH
OFFSITE WATER TRANSMISSION LINE
DETAIL SECTIN
MOHAVE COUNTY ARIZONA

SHEET
DT-6
31 OF 31 SHEETS

Q:\18449\dwg\AZTEC-RD-EXTENSION\Imp-Plans 30%\PH1\AZTEC-RD-EXT_DETAILS.dwg, 2/24/2006 11:42:53 AM, \\LVG-PS1\hp5500-survey-pcl

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALTY

Certificate of Approval to Construct for a New Source Well

Applicant Information	ADEQ File Number 20060271		LTF No. 39586	Place ID 113601
Name	Rhodes Homes Arizona	Project Name	Golden Valley Ranch, Well # 1	
Mail Address 1	2215 Hualapai Mountain Road,			
Mail Address 2	Suite H	Project Location	Golden Valley, AZ	
City / State / Zip	Kingman, AZ 86409			
Project Type: New Source Well		**Project Description**		
Install a 12" diameter new source well , 600 horsepower electric motor and controls, with check valve and magnetic flow meter to serve the Golden Valley Ranch Development.				
Facility Name	Golden Valley Ranch Water System			
Street Address 1	2215 Hualapai Mountain Road			
Street Address 2	Suite H			
City / State / Zip	Kingman, AZ 86409			
PWSID	To Be Assigned			
County	Mohave			
Design Documents Approved	**Date**	**Site Information**		
Application	03/21/2006	Location of Distribution System: Golden Valley, AZ		
Site Plan	02/13/2006	Township	21 N	Range 18 W
Design Plan	02/13/2006	Section	34	Quarter Section SE
Operations Emergency Plan		Latitude	35° 09' 47.76'	North
Response Letter	04/06/2006	Longitude	114° 11' 14.1"	West
Other				

Approval to Construct (ATC) the above-described facilities as represented in approved plans documents on file with the Arizona Department of Environmental Quality is hereby given subject to the following provisions:

The General Provision and Special Provision of the Water Distribution System appear on Pages 2 through 3

Stephen Owens, Director

Arizona Department of Environmental Quality

By [signature] 4-28-06

Kurt J. Harris, P.E., Manager — Date Approved

Water Quality Design Review Unit

Northern Regional Office

CERTIFICATE DISTRIBUTION

Original Certificate

Rhodes Homes Arizona
2215 Hualapai Mountain Road, Suite H
Kingman, AZ 86409

Certificate Copy Only

ADEQ/NRO Reading File
ADEQ/NRO Construction File
Andy Wilson, Mike Howeth
ADEQ/PHX
Mohave County Env./Development Svc.
D. Kim Sorenson, P.E.,
Mr. Mark Clark, CCM
Stanley Consultants, Inc
5353 South, 960 East, Suite #220

A-11
admitted

General Provisions

1. Notice shall be given to the Northern Regional Office (NRO) in Flagstaff (1 (877) 602-3675) and to the appropriate county department when constr4uction of the project begins to allow for inspection during construction per A.R S § 49-104(B)(10) Contact Andy Wilson at (928) 773-2708 at least seven days prior to the start of construction

2. The project owner shall contact a professional engineer as soon as possible to provide detailed construction inspection of this project (A A C. R18-5-507) Upon completion of construction the retained professional engineer shall send to NRO the following:
   a. Engineers Certificate of Completions (attached).
   b. Sealed and signed As-Built plans with construction specifications.
   c. All Construction test data certified by the engineer.
   d. All construction test data; the certified number of an operator, who is certified by the Department at a grade appropriate for the facility, is employed to operate the potable water distribution system. After receipt of the items outlined above, NRO will review the file and, if in order, will issue an Approval of Construction (AOC).

3. Operation of a newly constructed facility shall not begin until an AOC is issued by the Department per A.A.C. R 18-5-507(A).

4. All materials and products that come into contact with drinking water or drinking water treatment chemicals must comply with NSF Standard 61. Any "or equal" substation shall also meet NSF Standard 61 may be considered if they otherwise comply with A.R.S § 49-353.01.

5. The certificate voids and supersedes all previous "Approval to Construct" issued previously for this file number.

6. Water line sewer line separation shall meet A.A.C. R 18-5-502. The separation requirements of A A C R 18-5-502 shall extend to all water line services and sewer line services within the right-of-way Separation of water and sewer line on an individual private property shall meet the requirements of the Uniform Plumbing Code (UPC)

7. As per A.A.C. R118-5-502(C)(5), Sewer mains (gravity, pressure, and force) shall be kept a minimum of 50 feet from wells unless the following conditions are met: a. Water main pipe, pressure tested in place to 50 psi without excessive leakage, is used for gravity sewers at distances greater than 20 feet from water wells.

8. This Approval to Construct will become void if an extension of time is not granted by the Department within 90 days after passage of one of the following (A.A.C. R18-5-505(E)):
   a. Construction does not begin within one year after the date the Approval to Construct is issued, or
   b. There is a halt in construction of more than one year, or
   c. Construction is not completed within three years after the date construction begins.

9. Construction material used in public water systems, including residential and non-residential facilities connected to the public water system, shall be lead free as defined by A.A.C. R 18-4-101(46)

ADEQ/NRO 1515 E. Cedar Ave Suit F. Flagstaff, AZ 86004 (928) 779-0313 1(877) 602-3675

Revised 11/22/2004

Special Provisions

A. As per R18-4-(B)(1)(d), provide Water Quality Data – Priority Pollutants for organic and inorganic for new source approval. Laboratory Analysis must be on ADEQ, Safe Drinking Water Quality Source Approval Form showing a complete water quality laboratory analysis. All water samples Chain-of-Custody to report forms shall use ADWR #55-901769 Well Number.

B. Provide copies of Notice to Intent to Drill as soon as they are received. Please include ADWR Well completion report and ADWR Well Identification #55-901769. Please include a copy of this ATC with any subsequent submittals to assist NRO in document tracking and filing these document forms.

As per R12-15 (D), please include ADWQ Well completion report ADWR Well Identification #55-901769.

C. As per A.A.C. R18-4-116, submit an Emergency Operations Plan meeting this requirement

D. As per A.A.C. R18-4-Article 6, must receive final approval from Kathy Stevens, ADEQ, Capacity Development Coordinator, 602-771-4653 prior to AOC.

E. As per ADWR, A.A.C. R12-5-502 (C)(5), Sewer mains (gravity, pressure and force) shall be kept at a minimum of 50 feet from wells unless the following conditions are met: a. Water main piper, pressure tested in place to 50 psi without excessive leakage, is used for gravity sewers at distances greater than 20 feet from water wells.

F. As per ADWR, A.A.C. R12-15-811, Install a functional water tight access port or some other means to collect water level measurements without having to remove pump and associated equipment.

G. As per ADWR, A.A.C. R18-15-, a sign having ADWR 55- 901769 well registration number is required. NRO recommends that it should be installed at an easily visible location closest to the proposed well as possible.

H. As per R18-4-501(2) and Bulletin 10, 2-E.8, please include a statement that the well is out of the 100 year flood plain and what if any site grading or protection is provided.

I. As per Bulletin 10, 2-E.6. The well site should be graded to provide drainage away from the well slab.

J. As per Bulletin 10, 3-C.4. Install an easily accessible shut-off valve on the discharge line, with a positive acting check valve between the pump and the valve

K. As per Bulletin 10, 3-G.1. Install non threaded sampling tap must be on the discharge side of check valve as close to the well as practical;

L. As per Bulletin 10, 2-A-3. Install an Emergency disinfection tap and electrical connection on discharge line was shown. ADEQ recommends this tap be added prior to the storage tank to maximize chlorine contact time and disinfection effectiveness.

M. As per Bulletin 10, 3-C.7. Pressure gage and flow meter (totalizing as per ADWR R12-15-902) on discharge line.

N. As per Bulletin 8, 2-E.20. Well driller is required to disinfect well when submersible pump is deployed or show testing data of the results

O. "New Well and Source", Elementary Business Plan of the Perkins Mountain Water System. The Perkins Mountain Water System is to bear the risk of constructing a Public Water System that cannot be operated until all of the appropriate approvals have been obtained.

End of Provisions

ADEQ/NRO 1515 E Cedar Ave Suit F, Flagstaff, AZ 86004 (928) 779-0313 1(877) 602-3675

Janet Napolitano
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.adeq.state.az.us

Stephen A. Owens
Director

DATA REQUIRED WITH ECC

THE FOLLOWING RECORD REQUIREMENTS ARE ATTACHED:

1 0 CONSTRUCTION DRAWINGS WITH 'AS-BUILT' LOCATION OF PIPE FITTINGS ETC MARKING IN RED PREPARED BY_____

2 0 PRESSURE AND LEAKAGE TEST RESULTS					
2 1 DATE TESTED					
2.2 TIME STARTED					
2 3 TIME FINISHED					
2 4 PIPE DIAMETER					
2 5 FOOTAGE TESTED					
2 6 ALLOWABLE LEAKAGE					
2 7 LEAKAGE OBSERVED					
2 8 PRESSURE AT TEST POINT					
2 9 EMPLOYEE OBSERVING TEST (print)					
2 10 INITIALS OF EMPLOYEE					
3 0 DISINFECTION SAMPLING:					
3 1 INITIAL SAMPLING (Minimum 50 ppm available chlorine)	DATE				
	TIME				
	PPM Cl_2				
3 2 AFTER 24 HOURS DETENTION TIME (Minimum 10 ppm free chlorine)	DATE				
	TIME				
	PPM Cl_2				
3.3 AFTER SUFFICIENT FLUSHING (Water is clear and system Cl_2 residual is measured)	DATE				
	TIME				
	PPM Cl_2				
4.0 BACTERIOLOGICAL SAMPLING (S):	DATE				
	TIME				
	ATTACHED	Yes/No	Yes/No	Yes/No	Yes/No

I certify that I have inspected the work done and have found it to be satisfactory and in accordance with approved specifications

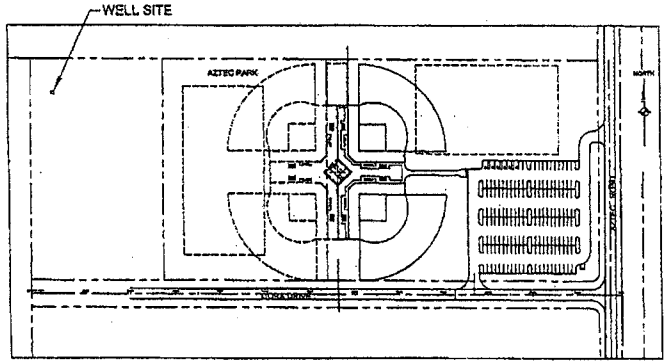
_____ Authorized Person's Signature

_____ Date

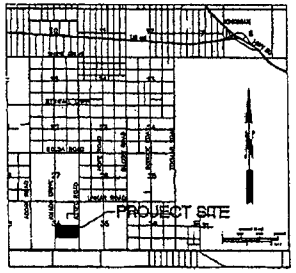
RHODES HOMES ARIZONA L.L.C.
GOLDEN VALLEY RANCH WELL #1
MOHAVE COUNTY, ARIZONA

APRIL 2006
ADWR NUMBER: 55-901789

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION



PROJECT LOCATION MAP
Scale: NTS



VICINITY MAP
Scale: NTS

DEVELOPER
RHODES HOMES ARIZONA LLC
2215 HUALAPAI MTN. RD.
SUITE H
KINGMAN, ARIZONA 86401
(928) 718-2210

ENGINEER / SURVEYOR
STANLEY CONSULTANTS, INC.
5820 S. EASTERN AVENUE
SUITE 200
LAS VEGAS, NEVADA 89119
(702) 369-8366

BASIS OF BEARINGS
NORTH 00°12'47" EAST – THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 27, TOWNSHIP 21 NORTH, RANGE 18 WEST, GILA & SALT RIVER MERIDIAN, MOHAVE COUNTY, ARIZONA, AS DETERMINED BY THE ARIZONA COORDINATE SYSTEM OF 1983 (AZ83-WF), WEST ZONE, INTERNATIONAL FOOT, UTILIZING FAST STATIC OBSERVATIONS PROCESSED BY NGS-OPUS. M.C.S.D. "50 35" = LATITUDE 35°05'22.43032"N, LONGITUDE 114°10'58.06309"W (NAD '83) HEIGHT 2468.56824ft (NAVD'88)

BENCHMARK
BENCHMARK # "AZT 5" M.C.S.D.
ELEVATION = 2659.468ft (NGVD '29)
CONVERSION = 2662.014ft (NAVD '88) – 2.546 = 2659.468ft (NGVD '29)
DESCRIPTION: 1 1/2" ALUMINUM CAP IN CONCRETE STAMP MOHAVE COUNTY 1998 "RLS 10343", LOCATED AT THE SOUTHWEST CORNER OF AZTEC ROAD & BOLSA DRIVE.

DRAWING No.	SHEET No.	DESCRIPTION
G1	1	TITLE SHEET & SHEET INDEX
C1	2	SITE PLAN & DISCHARGE PLAN
WP1	3	PUMP & DISCHARGE DETAILS
WP2	4	DETAILS
WP3	5	DETAILS
PP1	6	PUMP TO WASTE PLAN AND PROFILE
E001–E012	7–18	ELECTRICAL
I001–I002	19–20	INSTRUMENTATION

APPROVED FOR CONSTRUCTION
APR 28 2006
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

APPROVAL

ADEQ _____ DATE _____
MOHAVE COUNTY _____ DATE _____
RHODES HOMES _____ DATE _____

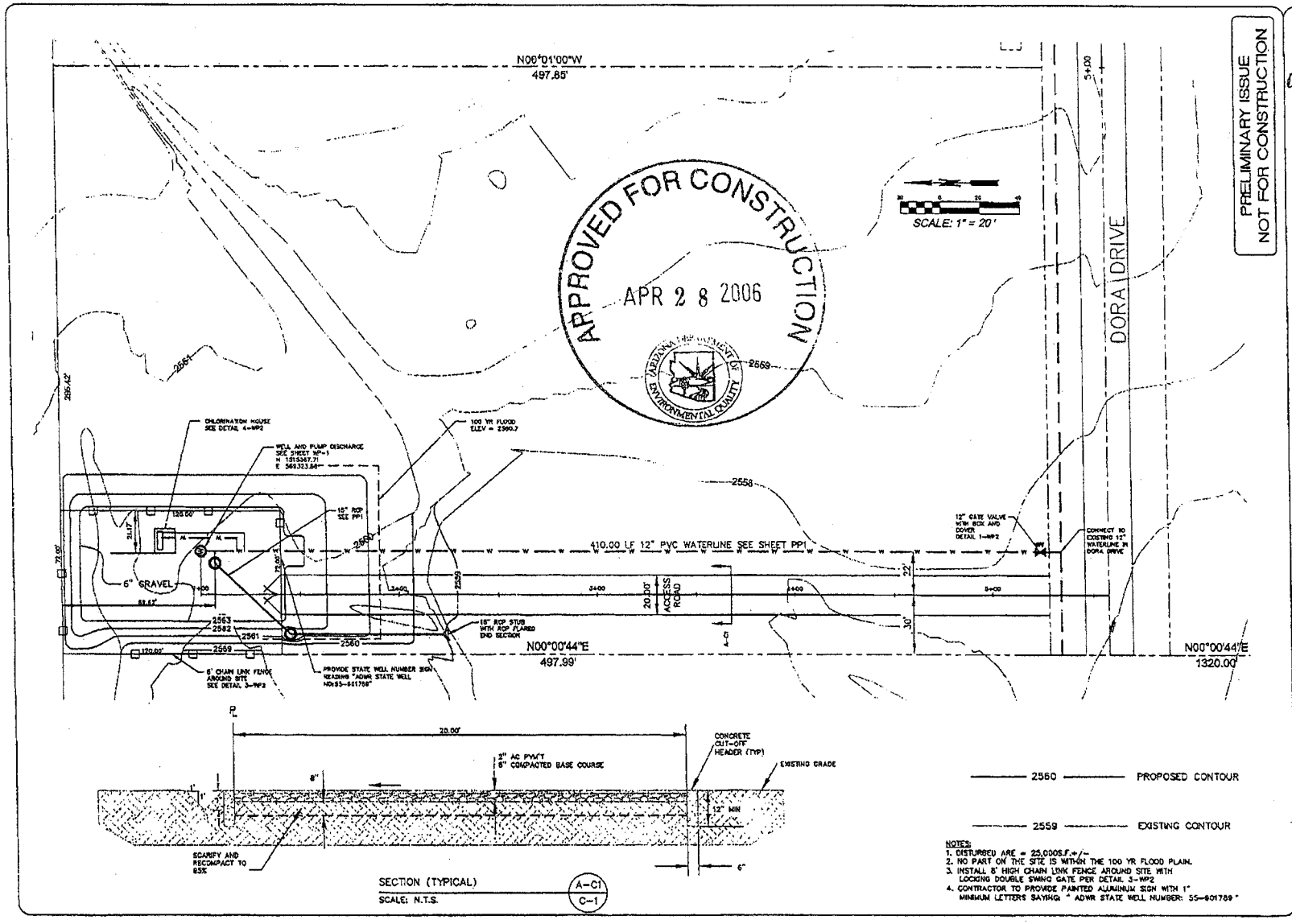
1	ADEQ COMMENTS	PM	1/23/06

SCALE (H) AS NOTED
SCALE (V) NA
DRAWN BY MB
CHECKED BY DKS
DATE 03-16-2006

Stanley Consultants INC.

RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH WELL #1
COVER SHEET
MOHAVE COUNTY ARIZONA

SHEET G1
1 OF 20 SHEETS
SCI PROJECT# 18495.07.03



NOTES:
1. DISTURBED ARE = 25,000S.F.+/-
2. NO PART ON THE SITE IS WITHIN THE 100 YR FLOOD PLAIN.
3. INSTALL 8' HIGH CHAIN LINK FENCE AROUND SITE WITH LOCKING DOUBLE SWING GATE PER DETAIL 3-WP2
4. CONTRACTOR TO PROVIDE PAINTED ALUMINUM SIGN WITH 1" MINIMUM LETTERS SAYING: " ADWR STATE WELL NUMBER: 55-601789 "

-	ADED COMMENTS	PH	BKS	1/13/06

SCALE (H) 1"=20'
SCALE (V) N/A
DRAWN BY D. Curtis
CHECKED BY
DATE 03-01-2006

Stanley Consultants INC.

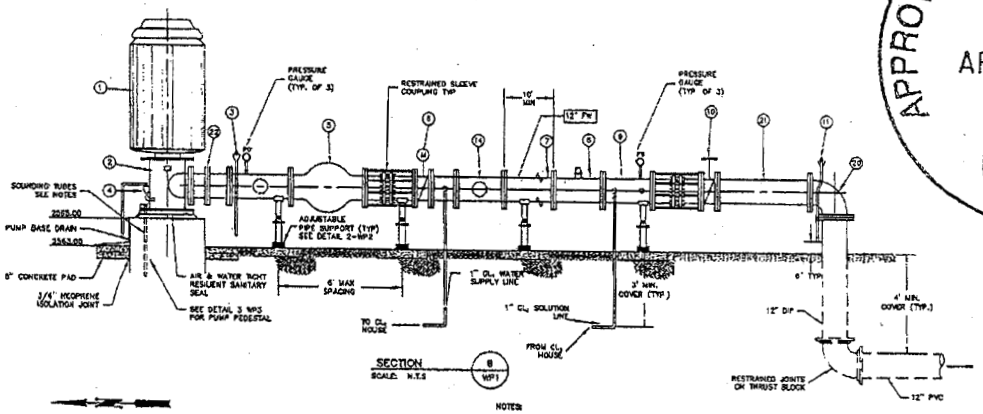
RHODES HOMES ARIZONA, LLC

GOLDEN VALLEY RANCH WELL #1
SITE PLAN

MOHAVE COUNTY ARIZONA

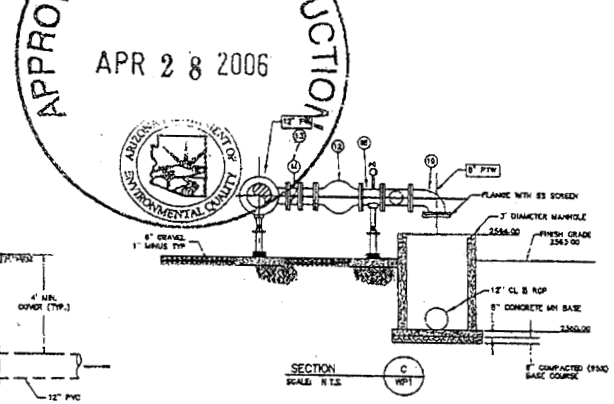
SHEET
C1
2 OF 20 SHEETS

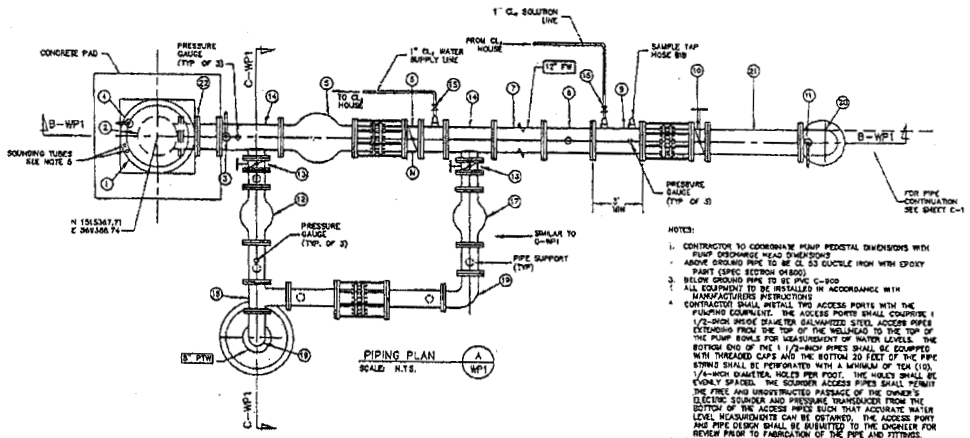
SO PROJECT#
18465.07.03



NOTES:

PUMP AND MOTOR ARE CURRENTLY IN USE AT THE SITE. CONTRACTOR SHALL REMOVE PUMP MOTOR AND EXTEND PUMP DISCHARGE COLUMN AND MOTOR SHAFT TO MATCH FINISHED PUMP FOUNDATION ELEVATION





NOTES:

1. CONTRACTOR TO COORDINATE PUMP PEDESTAL DIMENSIONS WITH PUMP DISCHARGE HEAD DIMENSIONS
2. ABOVE GROUND PIPE TO BE CL 53 DUCTILE IRON WITH EPOXY PAINT (SPEC SECTION 09800)
3. BELOW GROUND PIPE TO BE PVC C-900
4. ALL EQUIPMENT TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS
5. CONTRACTOR SHALL INSTALL TWO ACCESS PORTS WITH THE PUMPING EQUIPMENT. THE ACCESS PORTS SHALL CONSTRUCT 1 1/2-INCH INSIDE DIAMETER GALVANIZED STEEL ACCESS PIPES EXTENDING FROM THE TOP OF THE WELLHEAD TO THE TOP OF THE PUMP BOWLS FOR MEASUREMENT OF WATER LEVELS. THE BOTTOM END OF THE 1 1/2-INCH PIPES SHALL BE EQUIPPED WITH THREADED CAPS AND THE BOTTOM 20 FEET OF THE PIPE STRING SHALL BE PERFORATED WITH A MINIMUM OF TEN (10), 1/4-INCH DIAMETER HOLES PER FOOT. THE HOLES SHALL BE EVENLY SPACED. THE SOUNDER ACCESS PIPES SHALL PERMIT THE FREE AND UNOBSTRUCTED PASSAGE OF THE OWNER'S ELECTRIC SOUNDER AND PRESSURE TRANSDUCER FROM THE BOTTOM OF THE ACCESS PIPES SUCH THAT ACCURATE WATER LEVEL MEASUREMENTS CAN BE OBTAINED. THE ACCESS PORT AND PIPE DESIGN SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION OF THE PIPE AND FITTINGS.
6. PLUG ALL OPEN HOLES IN PUMP BASE.
7. EXTEND PUMP BASE DRAIN OFF CONCRETE SLAB
8. ALL COMPONENTS TO BE LEAD FREE.
9. ALL PRODUCTS ADDED DIRECTLY TO WATER DURING PRODUCTION OR TREATMENT SHALL CONFORM TO ANSI/NSF STANDARD 60
10. ANY MATERIALS OR PRODUCTS INSTALLED AFTER JANUARY 1, 1993 THAT COMES INTO CONTACT WITH WATER OR A WATER TREATMENT CHEMICAL SHALL CONFORM TO ANSI/NSF STANDARD 61
11. ALL WATER LINES SHALL BE DISINFECTED PER ADEQ BULLTIN 8 & AWWA C651-92.
12. WATER & SEWER LINE SEPARATION SHALL BE IN ACCORDANCE WITH A.A.C. R18-4-302(C)
13. SYSTEM SHALL BE PRESSURE AND LEAK TESTED PER AWWA C600.

VALVE AND EQUIPMENT SCHEDULE

NO.	DESCRIPTION	SIZE	JOINT TYPE	REMARKS
1	ELECTRIC MOTOR	600 HP	---	N.I.C. BY PUMP EQUIPMENT SUPPLIER
2	DISCHARGE HEAD	12" DISCHARGE	---	N.I.C. BY PUMP EQUIPMENT SUPPLIER
3	AIR/VAC VALVE ASSEMBLY	1"	---	APCO SERIES 140 W/#16 MESH SCREEN
4	COMB AIR VAC/AIR RELEASE DEEP WELL AIR VENT	1"	---	APCO 144 DAT W/#16 MESH SCREEN
5	SILENT CHECK VALVE	12"	FL X FL	CCV SERIES 94-3
6	BUTTERFLY VALVE	12"	FL X FL	ELECTRIC MOTOR ACTUATOR
7	SPOOL PIECE	12"	FL x FL	MINIMUM LENGTH OF 5 PIPE DIAMETERS
8	MAGNETIC FLOWMETER	12"	FL X FL	SIEMENS MAG 5100W
9	SPOOL PIECE W/OUTLET	12"	FL x FL	MINIMUM LENGTH OF 3 PIPE DIAMETERS
10	AWWA BUTTERFLY VALVE	12"	FL X FL	HAND WHEEL OPERATOR
11	COMB AIR VAC/AIR RELEASE VALVE ASSEMBLY	1"	---	APCO 1430
12	AUTOMATIC CONTROL VALVE	8"	FL X FL	CCV SERIES 126
13	BUTTERFLY VALVE	8"	FL X FL	HAND WHEEL OPERATOR
14	TEE	12" x 12" x 8"	FL x FL x FL	
15	BALL VALVE	1"	THREADED	
16	SPOOL PIECE WITH TAP	8"	FL X FL	
17	SURGE ANTICIPATION VALVE	8"	FL X FL	CCV SERIES 106SA-3
18	TEE	4" X 8" X 8"	FL X FL	
19	90° BEND	8"	FL X FL	
20	90° BEND	12"	FL X FL	
21	STATIC MIXER	12"	FL X FL	KENFLO SERIES-512 2 ELEMENT
22	BELLOWS PUMP CONNECTOR	12"	FL X FL	HYSPAN SERIES 6500

FL = FLANGE

THE EQUIPMENT TO BE PROVIDED BY THE LISTED MANUFACTURER OR EQUAL

APPROVED FOR CONSTRUCTION
APR 28 2006
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

NO.	DESCRIPTION	BY	DATE	APPROVED
1	ADEQ CONDITIVE			

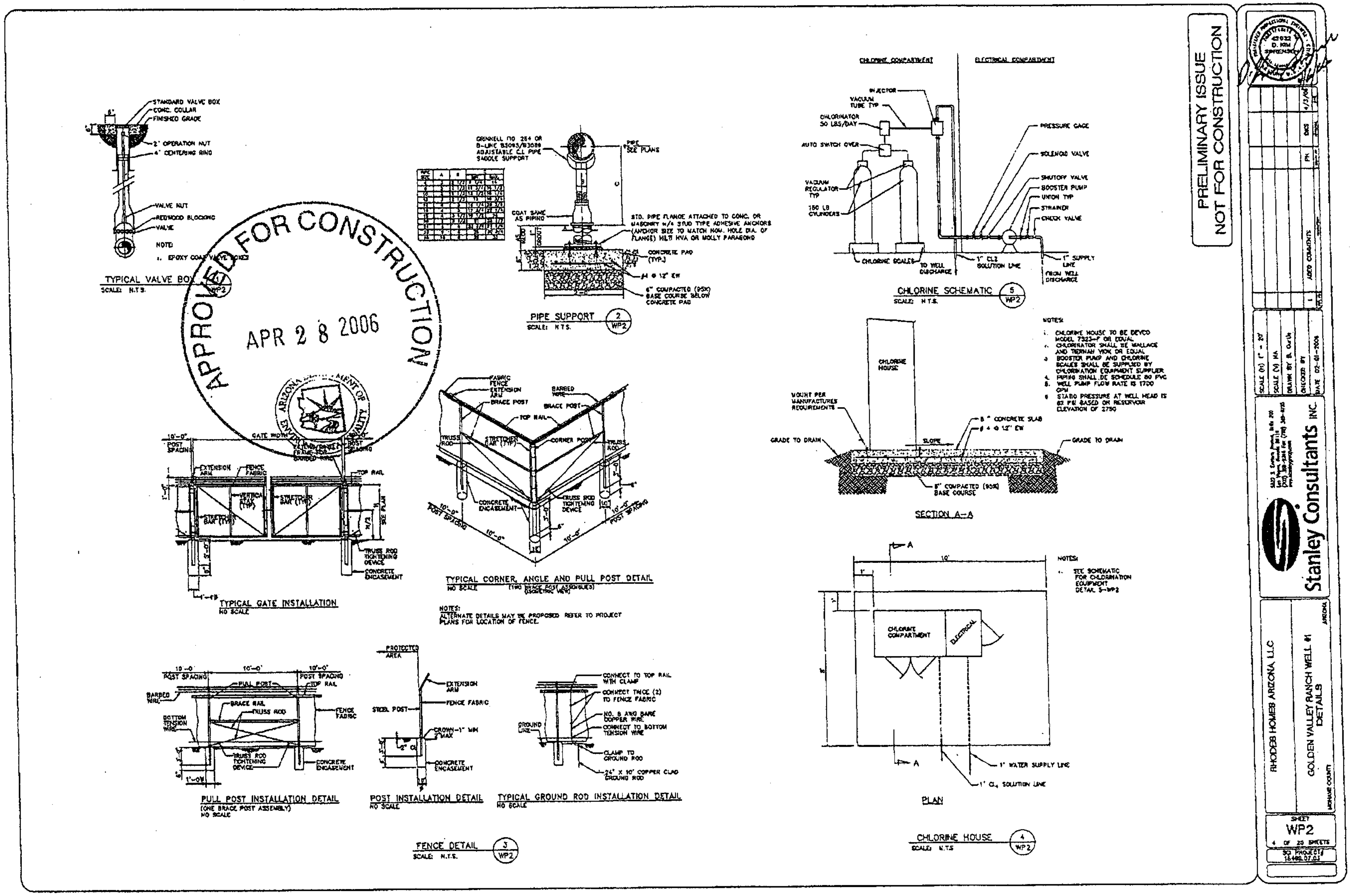
SCALE (H) 1" = 2'
SCALE (V) NA
DRAWN BY R. OLVEN
CHECKED BY
DATE 02-21-2006

Stanley Consultants INC.
5151 E. Broadway Blvd., Suite 700
Tucson, Arizona 85711-3627
(520) 745-2300 Fax (520) 745-2732
www.stanleyconsultants.com

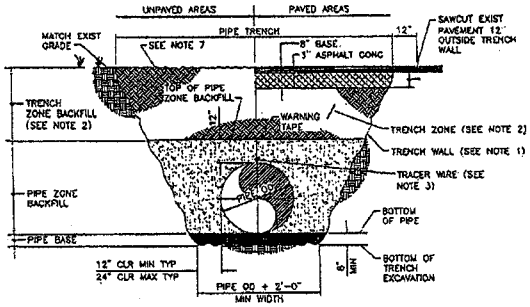
RHODES HOMES ARIZONA LLC

GOLDEN VALLEY RANCH WELL #1
PUMP AND DISCHARGE DETAILS
MOHAVE COUNTY ARIZONA

SHEET
WP1
3 OF 20 SHEETS
SCI PROJECT
18499.07.03

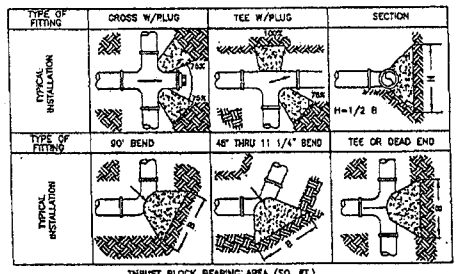


PRELIMINARY ISSUE
NOT FOR CONSTRUCTION
APPROVED FOR CONSTRUCTION
APR 2 8 2006
STANDARD VALVE BOX
CONC. COLLAR
FINISHED GRADE
2" OPERATION NUT
4" CENTERING RING
VALVE NUT
REDWOOD BLOCKING
VALVE
NOTE:
1. EPOXY COAT VALVE BOXES
TYPICAL VALVE BOX
SCALE: N.T.S.
GRINNELL FIG 264 OR
B-LINE B3093/B3088
ADJUSTABLE C.I. PIPE
SADDLE SUPPORT
PIPE
SEE PLANS
COAT SAME
AS PIPING
STD. PIPE FLANGE ATTACHED TO CONC. OR MASONRY W/4 STUD TYPE ADHESIVE ANCHORS (ANCHOR SIZE TO MATCH NOM. HOLE DIA. OF FLANGE) HILTI HVA OR MOLLY PARABOND
CONCRETE PAD (TYP.)
6" COMPACTED (95%) BASE COURSE BELOW CONCRETE PAD
PIPE SUPPORT
SCALE: N.T.S.
CHLORINE COMPARTMENT
ELECTRICAL COMPARTMENT
INJECTOR
VACUUM TUBE TYP
CHLORINATOR 50 LBS/DAY
AUTO SWITCH OVER
VACUUM REGULATOR TYP
150 LB CYLINDERS
CHLORINE SCALES
TO WELL DISCHARGE
1" CL2 SOLUTION LINE
PRESSURE GAGE
SOLENOID VALVE
SHUTOFF VALVE
BOOSTER PUMP
UNION TYP
STRAINER
CHECK VALVE
1" SUPPLY LINE
FROM WELL DISCHARGE
CHLORINE SCHEMATIC
SCALE: N.T.S.
NOTES:
1. CHLORINE HOUSE TO BE DEVCO MODEL 7323-F OR EQUAL
2. CHLORINATOR SHALL BE WALLACE AND TIERNAN V10K OR EQUAL
3. BOOSTER PUMP AND CHLORINE SCALES SHALL BE SUPPLIED BY CHLORINATION EQUIPMENT SUPPLIER
4. PIPING SHALL BE SCHEDULE 80 PVC
5. WELL PUMP FLOW RATE IS 1700 GPM
6. STATIC PRESSURE AT WELL HEAD IS 82 PSI BASED ON RESERVOIR ELEVATION OF 2750
CHLORINE HOUSE
MOUNT PER MANUFACTURES REQUIREMENTS
GRADE TO DRAIN
SLOPE
8" CONCRETE SLAB
#4 @ 12" EW
8" COMPACTED (95%) BASE COURSE
SECTION A-A
FABRIC FENCE
EXTENSION ARM
BRACE POST
BARBED WIRE
TOP RAIL
TRUSS ROD
STRETCHER BAR (TYP)
CORNER POST
CONCRETE ENCASEMENT
TRUSS ROD TIGHTENING DEVICE
10'-0" POST SPACING
TYPICAL CORNER, ANGLE AND PULL POST DETAIL
NO SCALE
(TWO BRACE POST ASSEMBLIES) (ISOMETRIC VIEW)
NOTES:
ALTERNATE DETAILS MAY BE PROPOSED. REFER TO PROJECT PLANS FOR LOCATION OF FENCE.
GATE WIDTH
EXTENSION ARM
FENCE FABRIC
VERTICAL STAY (TYP)
STRETCHER BAR (TYP)
TOP RAIL
TRUSS ROD TIGHTENING DEVICE
CONCRETE ENCASEMENT
TYPICAL GATE INSTALLATION
NO SCALE
NOTES:
1. SEE SCHEMATIC FOR CHLORINATION EQUIPMENT DETAIL 5-WP2
CHLORINE COMPARTMENT
ELECTRICAL
1" WATER SUPPLY LINE
1" CL2 SOLUTION LINE
PLAN
CHLORINE HOUSE
SCALE: N.T.S
POST SPACING
PULL POST
BARBED WIRE
BRACE RAIL
TRUSS ROD
BOTTOM TENSION WIRE
TRUSS ROD TIGHTENING DEVICE
CONCRETE ENCASEMENT
PULL POST INSTALLATION DETAIL
(ONE BRACE POST ASSEMBLY)
NO SCALE
PROTECTED AREA
EXTENSION ARM
STEEL POST
FENCE FABRIC
CROWN-1" MIN 2" MAX
POST INSTALLATION DETAIL
NO SCALE
CONNECT TO TOP RAIL WITH CLAMP
CONNECT TWICE (2) TO FENCE FABRIC
NO. 6 AWG BARE COPPER WIRE
CONNECT TO BOTTOM TENSION WIRE
GROUND LINE
CLAMP TO GROUND ROD
3/4" X 10' COPPER CLAD GROUND ROD
TYPICAL GROUND ROD INSTALLATION DETAIL
NO SCALE
FENCE DETAIL
SCALE: N.T.S.
Stanley Consultants INC.
SCALE (H) 1" = 20'
SCALE (V) NA
DRAWN BY B. Curtis
CHECKED BY
DATE 02-01-2006
ADDED COMMENTS
RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH WELL #1
DETAILS
MOHAVE COUNTY
ARIZONA
SHEET
WP2
4 OF 23 SHEETS
SCI PROJECT
15468.07.03



NOTES:
1. TRENCH SHALL MEET ALL CURRENT OSHA AND ARIZONA STATE REQUIREMENTS FOR SAFETY
2. TRENCH ZONE BACKFILL SHALL BE A MIN 48", MAX 72", AND 95% COMPACTED
3. MIN 14 GAUGE COATED TRACER WIRE
4. NO CONSTRUCTION VEHICLES WILL BE ALLOWED TO DRIVE OVER PIPELINE UNTIL HEIGHT OF BACKFILL IS 3 OVER TOP OF PIPE
5. MINIMUM CLEARANCE BETWEEN PIPE O.D AND TRENCH WALL SHALL BE 12 INCHES FOR COMPACTED PIPE ZONE MATERIAL
6. FOR BACKFILL MATERIAL AND COMPACTION REQUIREMENTS SEE SPECIFICATIONS
7. MOUND BACKFILL ABOVE PIPE SLOPE TO DRAIN AWAY. MAINTAIN EXISTING DRAINAGE PATTERN.

PIPE TRENCH DETAIL — 1 / WP3
SCALE: N.T.S

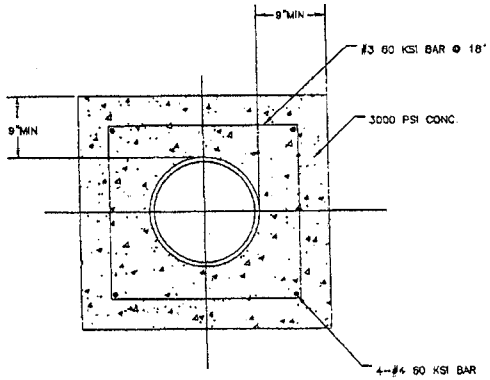


THRUST BLOCK BEARING AREA (SQ. FT)

TYPE OF FITTING	11.25° BEND	22.5° BEND	45° BEND	90° BEND	TEE OR PLUG
SIZE OF PIPE 4"	0.4	0.7	1.4	2.7	1.9
6"	0.8	1.7	3.2	6.0	4.2
8"	1.5	2.9	5.8	10.7	7.5
10"	2.3	4.6	9.0	16.7	11.8
12"	3.3	6.6	13.0	24.0	17.0
14"	4.5	9.0	17.7	32.7	23.1
16"	5.5	11.8	23.1	42.7	30.2
18"	7.5	14.9	29.2	54.0	38.2

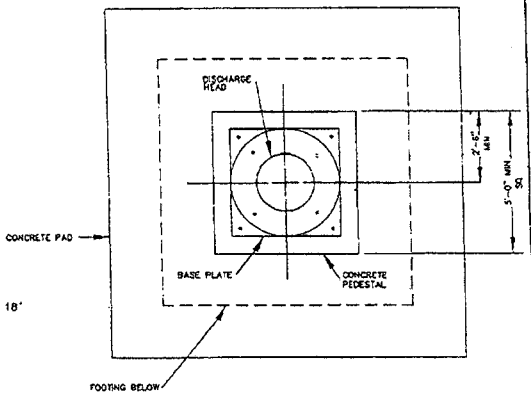
NOTE:
1. ALL WORK MUST BE INSPECTED PRIOR TO BACKFILL
2. CONSTRUCT THRUST BLOCKS W/2000 PSI CONCRETE-CURE MINIMUM 5 DAYS.
3. AREAS ARE BASED ON 150 PSI TEST PRESSURE AND 1500 PSF BEARING CAPACITY.
4. BEARING AREAS, VOLUMES, AND SPECIAL BLOCKING DETAILS SHOWN ON PLANS TAKE PRECEDENCE.
5. BLOCKS TO BE POURED AGAINST UNDISTURBED SOIL.
6. WRAP ALL METAL FITTINGS WITH 8-MIL POLYETHYLENE FILM AFTER APPLYING 2 FIELD COATS OF HO-GUARD WAX TO NUTS & BOLTS BEFORE POURING THRUST BLOCKS.
7. INSTALLATIONS USING DIFFERENT PIPE, TEST PRESSURES, AND/OR BEARING CAPACITIES ADJUST AREAS ACCORDINGLY, SUBJECT TO APPROVAL OF ENGINEER.
8. CONTRACTOR SHALL ADJUST THRUST BLOCKS IN AREAS WHERE TEST AND OPERATING PRESSURES EXCEED DESIGNED TEST PRESSURE

THRUST BLOCKS — 2 / WP3
SCALE: N.T.S.

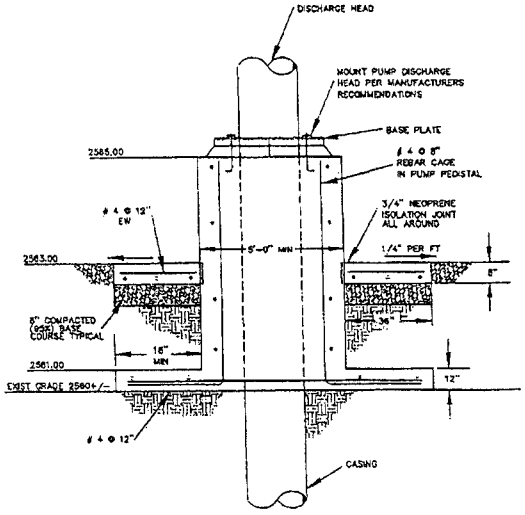


NOTE
1. CONCRETE SHALL BE POURED AGAINST UNDISTURBED EARTH

CONCRETE ENCASEMENT — 4 / WP3
SCALE: N.T.S



PUMP PEDESTAL PLAN
SCALE: N.T.S.



PUMP PEDESTAL — 3 / WP3
SCALE: N.T.S.

APPROVED FOR CONSTRUCTION
APR 28 2006
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

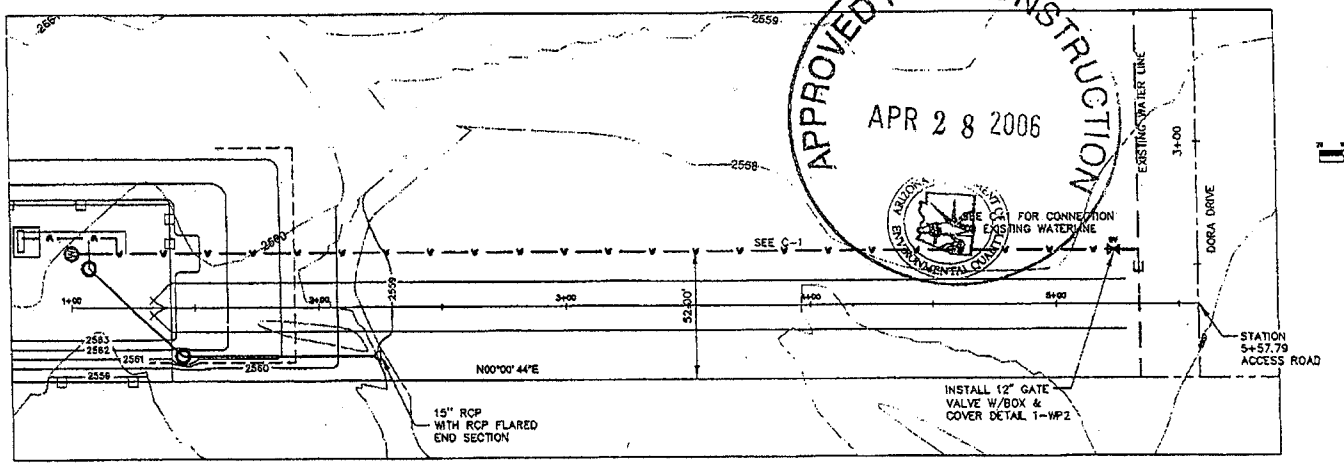
REV.	DATE	DESCRIPTION	DES.	DWN.	CHK.	APP.
1		ADDL COMMENTS	PH	DCS		4/3/06

SCALE (H) 1" = 20'
SCALE (V) NA
DRAWN BY R. Curtis
CHECKED BY
DATE 02-01-2006

Stanley Consultants INC.
2999 N. 44th Street, Suite 250 Phoenix, Arizona 85018 (602) 381-8100 Fax (602) 381-8199

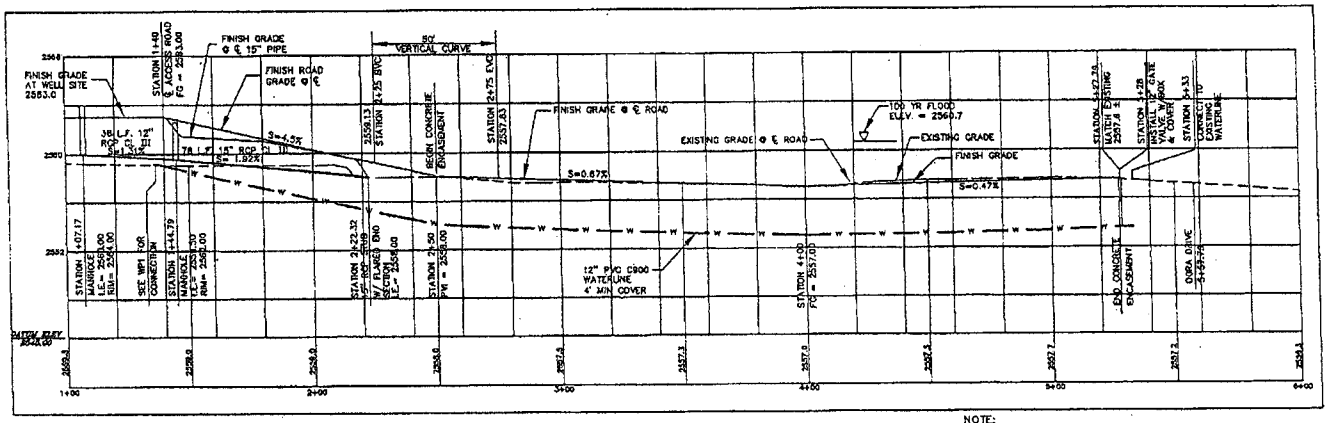
PINNACLE HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH WELL #1 DETAILS
MOHAVE COUNTY ARIZONA

SHEET WP3
3 OF 30 SHEETS
SC PROJECT 184P2.07.01



PLAN

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION



NOTE:
ENCASE WATERLINE IN CONCRETE BELOW WASH SEE 4-WP3 FOR ENCASEMENT DETAIL

PROFILE

RHODES HOMES ARIZONA, LLC

GOLDEN VALLEY RANCH WELL #4
DISCHARGE PIPE PLAN AND PROFILE

MOHAVE COUNTY, ARIZONA

Stanley Consultants INC.

SHEET PP1
1 OF 20 SHEETS

SC PROJECT 18.458.07.03

SCHEMATIC DIAGRAM SYMBOLS

Symbol	Description	Symbol	Description
CR	CONTROL RELAY	HAND / AUTO, XO	2 POSITION SELECTOR SWITCH POSITION LEGEND: X=CLOSED O=OPEN
TD	TIME DELAY RELAY	HAND / OFF / AUTO, XOO	3 POSITION SELECTOR SWITCH HAND – OFF – AUTO POSITION LEGEND: X=CLOSED O=OPEN
AR	ALARM RELAY		NORMALLY CLOSED PUSH BUTTON
ETM	ELAPSED TIME METER		LOCKOUT STOP PUSH BUTTON
M	MOTOR STARTER OR CONTACTOR COIL		NORMALLY OPEN PUSH BUTTON
PC	PHOTO CELL		EMERGENCY STOP PUSH BUTTON (MAINTAINED)
R	BEACON ALARM LIGHT LETTER INDICATES COLOR R=RED, A=AMBER, B=BLUE, G=GREEN	AMPS	DISCONNECT SWITCH SHOWN WITH RATING AND NUMBER OF POLES
R	PILOT LIGHT LETTER INDICATES COLOR R=RED, A=AMBER, B=BLUE, G=GREEN		LIMIT OR POSITION SWITCH
	OUTPUT DV/DT FILTER	PSH	PRESSURE SWITCH HIGH
	HEATING ELEMENT	PSL	PRESSURE SWITCH LOW
	TRANSFORMER		FLOW SWITCH
CT	CURRENT TRANSFORMER		LEVEL FLOAT SWITCH
	GROUND CONNECTION	ICTO	TIMER RELAY CONTACT INSTANTANEOUS CLOSE TIME DELAY OPEN
	GENERATOR	NOTC	TIMER RELAY CONTACT NORMALLY OPEN TIME DELAY CLOSE
HORN	HORN		TEMPERATURE SWITCH
	FULL VOLTAGE NON-REVERSING (FVNR) MOTOR STARTER OR CONTACTOR NUMBER DESIGNATES NEMA SIZE		FUSE
	NORMALLY OPEN CONTACT	AMPS	FUSEHOLDER OR FUSEBLOCK
	NORMALLY CLOSED CONTACT		THERMAL OVERLOAD RELAY
DI DO	RTU OR PLC CONTACT		TERMINAL BLOCK
			DEVICE LOCATED AT REMOTE LOCATION
			CONDUIT SEALOFF

POWER SINGLE LINE DIAGRAM SYMBOLS

Symbol	Description	Symbol	Description
	JUNCTION BOX WITH POWER DISTRIBUTION BLOCK OR LUGS	AMPS, POLES	CIRCUIT BREAKER, SHOWN WITH TRIP RATING AND NUMBER OF POLES
	CONDUIT SEALOFF	AMPS, MCP, POLES	MOTOR CIRCUIT PROTECTOR WITH TRIP RATING AND NUMBER OF POLES
	LTC CONNECTION	AMPS, POLES	DISCONNECT SWITCH SHOWN WITH RATING AND NUMBER OF POLES
	MC CONNECTION	MMR	MOTOR MANAGEMENT RELAY
	BOND TO METALLIC WATER PIPE	SSS	SOLID STATE STARTER
UM	UTILITY METER	VFD	VARIABLE FREQUENCY DRIVE
HP	MOTOR, NUMBER DESIGNATES NEMA HORSEPOWER SIZE	HF	HARMONIC FILTER
	FUSE	EOL	ELECTRONIC OVERLOAD RELAY
AMPS	FUSEHOLDER OR FUSEBLOCK		GROUND CONNECTION

SITE PLAN SYMBOLS

Symbol	Description	Symbol	Description
	TELEPHONE OUTLET		FIELD DEVICE
$	SINGLE POLE SWITCH		GROUND ROD
$3	3 WAY SWITCH		DUPLEX RECEPTACLE
$4	4-WAY SWITCH		ANTENNA MAST
$M	MANUAL MOTOR STARTER		CONDUIT SEALOFF
	SPECIAL PURPOSE OR WELDING OUTLET		DISCONNECT SWITCH
S	SMOKE DETECTOR	M	MOTOR
T	THERMOSTAT		

CIRCUIT SCHEDULE LEGEND

AAA-BC
- SEQUENCE NUMBER
- TYPE C=CONTROL P=POWER
- DEVICE SERVED

ELECTRICAL ABBREVIATIONS

A	AMPERE
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AI	ANALOG INPUT
AIC	AMPS INTERRUPTING CAPACITY
AO	ANALOG OUTPUT
AS	AIR SUPPLY
ATS	AUTOMATIC TRANSFER SWITCH
BC	BYPASS CONTACTOR
C	CONDUIT
CB	CIRCUIT BREAKER
CCW	COUNTER CLOCKWISE
CL2	CHLORINE
CON	CONTACTOR
CPB	CONTROL PULLBOX
CU	COPPER, BARE
CV	CONTROL VALVE
CW	CLOCKWISE
DCS	DISTRIBUTED CONTROL SYSTEM
DI	DISCRETE INPUT
DO	DISCRETE OUTPUT
DP	DISTRIBUTION PANEL
DV/DT	DIFFERENTIAL VOLTAGE/TIME
DWG	DRAWING
ETM	ELAPSED TIME METER
EOL	ELECTRONIC OVERLOAD
EXIST	EXISTING
FA	FOUL AIR
FC	FAIL CLOSED
FE	FLOW ELEMENT
FLA	FULL LOAD AMPS
FS	FLOW SWITCH
FVNR	FULL VOLTAGE NON-REVERSING
FW	FINISHED WATER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GND	GROUND
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GRS	GALVANIZED RIGID STEEL
H, HI	HIGH
H2S	HYDROGEN SULFIDE
HMI	HUMAN MACHINE INTERFACE
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
I	CURRENT
IC	INSTRUMENTATION CABLE
ICR	INTERMITTENT CYCLE REACTOR
IO	INPUT/OUTPUT
ISC	SHORT CIRCUIT CURRENT
JB	JUNCTION BOX
L, LO	LOW
LAN	LOCAL AREA NETWORK
LC	LOOP CONTROLLER
LCL	LEVEL CONTROL LOW
LCP	LOCAL CONTROL PANEL
LOS	LOCK-OUT-STOP
LOR	LOCAL/OFF/REMOTE
LS	LEVEL (I.E. FLOAT) SWITCH
LTC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
M	MOTOR
MA	MANUAL/AUTO
MA	MILLIAMP
MAX	MAXIMUM
MC	MANUFACTURER'S CABLE
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MFR(S)	MANUFACTURER(S)
MGD	MILLION GALLONS PER DAY
MGL	MILLIGRAMS PER LITER
MH	MANHOLE
MIN	MINIMUM
MOV	MOTOR OPERATED VALVE
MMR	MOTOR MANAGEMENT RELAY
MTU	MASTER TELEMETRY UNIT
NEC	NATIONAL ELECTRICAL CODE
NECA	NATIONAL ELECTRICAL CONTRACTOR ASSOCIATION
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NOTC	NORMALLY OPEN TIMED CLOSED
NPW	NON-POTABLE WATER
N2S	NITROGEN SUPPLY
NTS	NOT TO SCALE
NTU	TURBIDITY
OF	OVERFLOW
OIT	OPERATOR INTERFACE TERMINAL
OL	OVERLOAD
OLR	OVERLOAD RELAY
OO	ON/OFF (MAINTAINED)
OR	OFF-REMOTE
OSC	OPEN/STOP/CLOSE
P	PHASE
PB	PULL BOX
PCP	PROCESS CONTROL PANEL
PCV	PRESSURE CONTROL VALVE
PFR	PHASE/POWER FAILURE RELAY
PI	PULSE INPUT
PLC	PROGRAMMABLE LOGIC CONTROLLER
PLI	PLANT INFLUENT
PMP	PUMP
PNL	PANEL
PO	PULSE OUTPUT
PPB	POWER PULLBOX
PPG	POUNDS PER GALLON
PPH	POUNDS PER HOUR
PPM	PARTS PER MILLION
PR	PAIR
PRES	PRESSURE
PS	PRESSURE SWITCH
PSH	PRESSURE SWITCH, HIGH
PSI	POUNDS PER SQUARE INCH
PV	PROCESS VARIABLE
RAS	RETURN ACTIVATED SLUDGE
RW	RAW WATER
RF	RADIO FREQUENCY
RIO	REMOTE INPUT OUTPUT
RS	RAW SEWAGE
RSP	RAW SEWAGE PUMP
RST	RESET
RTD	RESISTANCE TEMPERATURE DETECTOR
RTU	REMOTE TELEMETRY UNIT
RWT	REFLECTED WAVE TRAP
SCA	SHORT CIRCUIT AMPS
SEQ	SERVICE ENTRANCE EQUIPMENT
SES	SERVICE ENTRANCE SECTION
SLC	SINGLE LOOP CONTROLLER
SLOS	START-LOCK-OUT-STOP
SMC	SUBMERSIBLE MANUFACTURER CABLE
SO2	SULFUR DIOXIDE
SP	SET POINT
SPC	SPARE CONDUIT
SPR	SPARE
SS	START/STOP
SSS	SOLID STATE STARTER (SOFT START)
ST	SHUNT TRIP
TC	TELEPHONE CABLE
TS	TEMPERATURE SWITCH
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
V	VOLT
VFD	VARIABLE FREQUENCY DRIVE
W	WATT, WIRE
WAS	WASTE ACTIVATED SLUDGE
WP	WEATHERPROOF
XFMR	TRANSFORMER
XMR	TRANSFORMER
XMTR	TRANSMITTER
ZS	POSITION (I.E., LIMIT) SWITCH

ELECTRICAL LINETYPES

- EXPOSED CONDUIT
- EXISTING EXPOSED CONDUIT
- UNDERGROUND CONDUIT
- EXISTING UNDERGROUND CONDUIT
- BARE COPPER GROUND CONDUCTOR
- EXISTING OR FUTURE
- NEW ELECTRICAL EQUIPMENT
- DEMOLITION
- DETAIL VIEW OR MATCHING
- CAPPED CONDUIT STUB OUT
- PXXX / CXXX — GROUPED CONDUIT AND CIRCUIT IDENTIFICATION TAGS. REFER TO THE POWER SINGLE-LINE, SCHEMATIC CONNECTION DIAGRAMS AND CIRCUIT SCHEDULE FOR CONDUIT SIZES AND CONTENTS.
  P=POWER
  C=CONTROL

GENERAL NOTES

1. THE COMPLETED INSTALLATION SHALL COMPLY WITH LATEST REVISION OF APPLICABLE FEDERAL, STATE, AND LOCAL CODES, ORDINANCES, AND REGULATIONS. THE CONTRACTOR SHALL OBTAIN NECESSARY PERMITS AND INSPECTIONS REQUIRED BY THE AUTHORITIES HAVING JURISDICTION. ALL WORK SHALL BE COMPLETED IN A NEAT, WORKMANLIKE MANNER IN ACCORDANCE WITH THE LATEST NECA STANDARDS OF INSTALLATION UNDER COMPETENT SUPERVISION. INSTALL GROUNDING PER NEC.
2. VISIT THE SITE PRIOR TO BIDDING TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND OTHER FACTORS, WHICH MAY AFFECT THE EXECUTION OF THE WORK. INCLUDE ALL RELATED COSTS IN THE INITIAL BID PROPOSAL.
3. THE CONTRACTOR SHALL COORDINATE WORK WITH THE UTILITIES PROVIDING SERVICES ON THIS PROJECT, AND SHALL COMPLY WITH ALL THEIR INSTALLATION REQUIREMENTS.
4. ALL MATERIALS SHALL BE NEW AND OF THE BEST QUALITY, MANUFACTURED IN ACCORDANCE WITH THE LATEST REVISION OF NEMA, ANSI, UL, OR OTHER APPLICABLE STANDARDS. THE USE OF MANUFACTURERS' NAMES, MODELS, AND NUMBERS IS INTENDED TO ESTABLISH STYLE, QUALITY, APPEARANCE, USEFULNESS, AND BID PRICE.
5. PROTECT ALL ELECTRICAL MATERIAL AND EQUIPMENT INSTALLED AGAINST DAMAGE BY OTHER TRADES, WEATHER CONDITIONS, OR ANY OTHER PREVENTABLE CAUSES. EQUIPMENT DAMAGED DURING SHIPPING OR CONSTRUCTION, PRIOR TO ACCEPTANCE BY THE ENGINEER OR THE OWNER, WILL BE REJECTED AS DEFECTIVE.
6. LEAVE THE SITE CLEAN. REMOVE ALL DEBRIS, EMPTY CARTONS, TOOLS, CONDUIT, WIRE SCRAPS AND ALL MISCELLANEOUS SPARE EQUIPMENT AND MATERIALS USED IN THE WORK DURING CONSTRUCTION. ALL COMPONENTS SHALL BE FREE OF DUST, GRIT AND FOREIGN MATERIALS. LEFT AS NEW BEFORE FINAL ACCEPTANCE OF WORK. DAMAGED PAINT AND FINISHES SHALL BE TOUCHED UP OR REPAINTED WITH MATCHING COLOR PAINT AND FINISH.
7. CIRCUIT CONDUCTORS #6 AWG OR SMALLER SHALL BE THWN STRANDED COPPER. #4 AWG THROUGH #2 AWG SHALL BE XHHW STRANDED COPPER. #1 AWG OR LARGER SHALL BE XHHW-2 STRANDED COPPER. MINIMUM POWER CONDUCTOR SIZE SHALL BE #12 AWG WITH #12 AWG GROUND.
8. UNDERGROUND CONDUITS SHALL BE SCHEDULE 40 PVC. MINIMUM CONDUIT DEPTH SHALL BE 24 INCHES. MINIMUM UNDERGROUND CONDUIT SIZE SHALL BE 1 INCH.
9. CONDUITS SHALL BE MARKED AT EACH END WITH MATCHING NUMBERED BRASS TAGS. SPARE CONDUITS SHALL HAVE A PULL STRING INSTALLED, SECURED, AND CAPPED.
10. EXPOSED CONDUITS SHALL BE GALVANIZED RIGID STEEL (GRS), MINIMUM SIZE 3/4 INCH, UNLESS OTHERWISE NOTED ON THE PLANS.
11. SAFETY SWITCHES, ELECTRICAL DISTRIBUTION EQUIPMENT, CONTROL PANELS, AND OTHER ELECTRICAL DEVICES SHALL BE UL LISTED, AND RATED FOR HEAVY DUTY SERVICE.
12. WIRING DEVICES SHALL BE SPECIFICATION GRADE.
13. THE CONTRACTOR IS RESPONSIBLE FOR MANAGING, SCHEDULING, DOCUMENTING, AND PERFORMING THE WORK SO THAT A COMPLETE ELECTRICAL, INSTRUMENTATION AND CONTROL SYSTEM FOR THE FACILITY IS PROVIDED. ACCURATE SHOP AND RECORD DRAWINGS, AND O&M MANUALS SHALL BE SUBMITTED PRIOR TO FINAL ACCEPTANCE OF THE WORK.
14. TYPICAL DETAILS SHALL APPLY IN ALL CASES, WHETHER SPECIFICALLY REFERRED TO OR NOT.

90% PRELIMINARY
NOT FOR
CONSTRUCTION

DL engineering & controls
2330 N. Central Ave. Ste. 1900 Phx. AZ 85012

Stanley Consultants INC.
5820 S. Eastern Avenue, Suite 200
Las Vegas, Nevada 89119
(702) 369-9396 Fax (702) 369-9793
www.stanleyconsultants.com

1	ADEQ REVIEW COMMENTS	CAF	DH	1/8/06

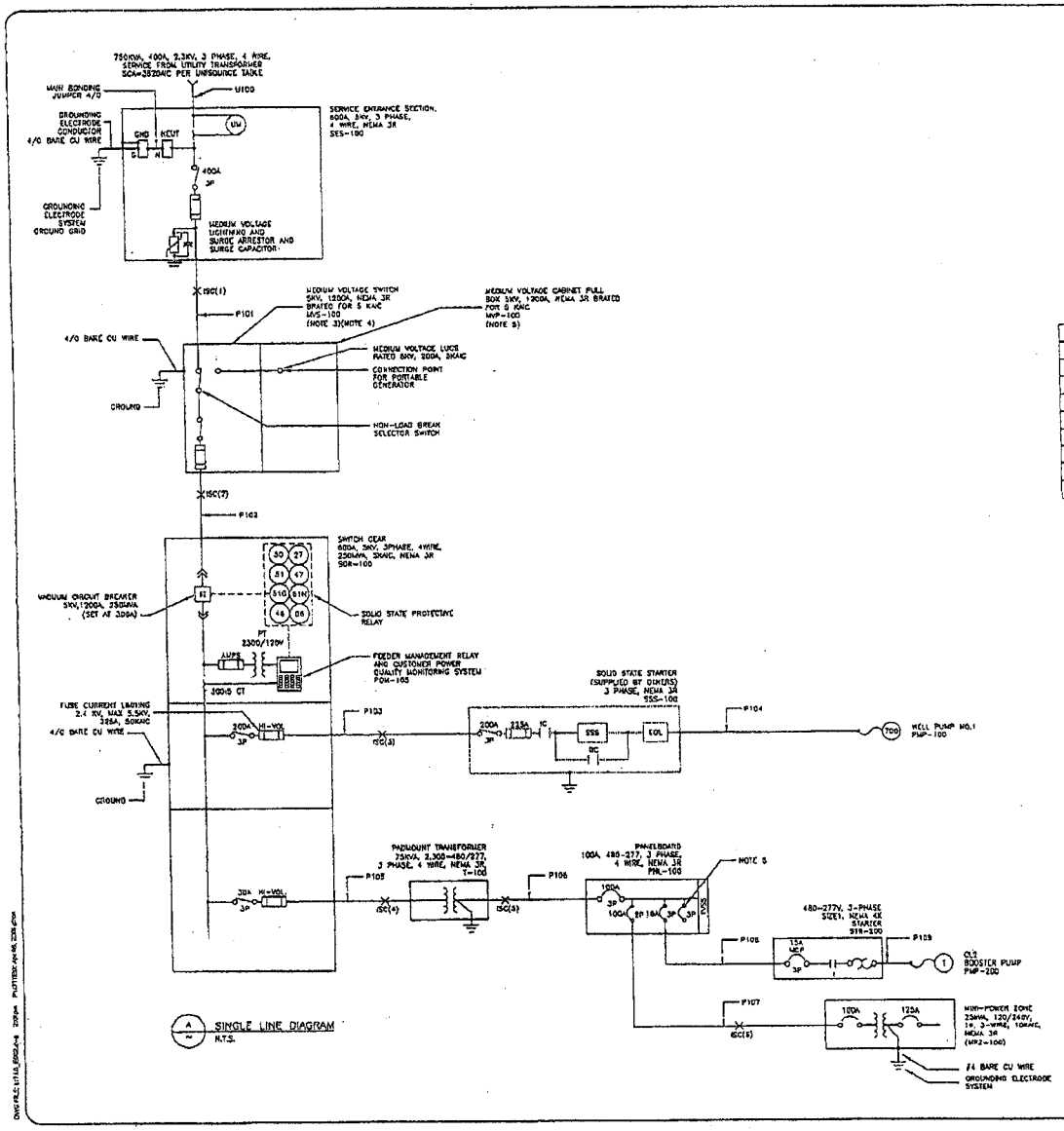
SCALE (H) NONE
SCALE (V) NONE
DRAWN BY CAF
CHECKED BY BDO
DATE 1/8/2006

RHODES HOMES ARIZONA LLC

GOLDEN VALLEY RANCH WELL #1
STANDARD ELECTRICAL SYMBOLS AND LEGEND
MOHAVE COUNTY ARIZONA

SHEET
E001
7 OF 20 SHEETS
SCI PROJECT/
18448.07.03

DWG FILE: 11740_E01.dwg PLOTTED: 1/4/06



A SINGLE LINE DIAGRAM
N.T.S.

NOTES:

1. ALL SHORT CIRCUIT INTERRUPTING AND PROTECTING DEVICES SHALL HAVE A SHORT CIRCUIT INTERRUPTING RATING EQUAL TO OR GREATER THAN THE AVAILABLE SHORT CIRCUIT ON THE BUS.
2. FUSES SHALL BE SIZED PER THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
3. MEDIUM VOLTAGE SWITCH SHALL INCLUDE A MOTOR-ASSISTED SWITCH FOR MANUAL OPERATION.
4. CONTRACTOR SHALL PROVIDE AUX CONTACTS FOR LOAD INTERRUPTER SWITCH POSITION INDICATION.
5. CONTRACTOR SHALL PROVIDE MEDIUM VOLTAGE LUGS RATED FOR 5KV, 1200A, 5KAIC AND CONNECT THE LOADSIDE OF THE CABINET TO NORMALLY OPEN SIDE OF MANUAL TRANSFER SWITCH.
6. FUTURE IRRIGATION PUMP CIRCUIT BREAKER SIZE IS YET TO BE DETERMINED.

CALLOUT NO.	NO. SETS	CONDUIT SIZE	CIRCUIT CONDUCTORS	CIRCUIT NO.'s
P101	1	4"	3 - 1/0, MV-105 TYPE, #8 GND	MVS100-P1
P102	1	4"	3 - 1/0, MV-105 TYPE, #0 GND	SGR100-P1
P103	1	3"	3 - 1/0, MV-105 TYPE, #8 GND	SSS100-P1
P104	1	4"	3 - 1/0, MV-105 TYPE, #8 GND	PMP100-P1
P105	1	2"	3 - # 6, MV-105 TYPE, #8 GND	T100-P1
P106	1	2"	4 - 1/0, #6 GND	PNL100-P1
P107	1	1.5"	3 - # 2, #4 GND	MPZ100-P1
P108	1	1"	3 - # 12, #12 GND	STR200-P1
P109	1	.75"	3 - # 12, #12 GND	PMP200-P2

B CIRCUIT SCHEDULE
N.T.S.

CIRCUIT/DESCRIPTION	KVA	HP	FLA
MOTOR LOADS			
WELL PUMP MOTOR PMP-100		75.0	158.6
NON-MOTOR LOADS			
THREE PHASE TRANSFORMER	75.0		18.0
SUBTOTAL			174.0
+ 25% OF LARGEST MOTOR			39.9
TOTAL AMPS @ 2400V/3PHASE			213.9
EXISTING SERVICE SIZE (AMPS)			400.0

C LOAD CALCULATIONS
N.T.S.

LIGHTING FIXTURE SCHEDULE				
TYPE	SYMBOL	DESCRIPTION	MOUNTING	MANUFACTURER
		[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]

D LIGHT FIXTURE SCHEDULE
N.T.S.

DOE PRELIMINARY NOT FOR CONSTRUCTION

DIL engineering & controls
2330 E. Carson Ave. Mesa, AZ 85213

#	ISSUED REVIEW CONCURRENT	EJF	GJF	1/15/03

SCALE (H) NONE
SCALE (V) NONE
DRAWN BY GJF
CHECKED BY EJF
DATE 1/15/2003

Stanley Consultants INC.
3200 E. Camelback Avenue, Suite 200
Phoenix, Arizona 85018
(602) 381-1313 Fax (602) 381-1393
www.stanleyconsultants.com

RHODES HOMES ARIZONA LLC

GOLDEN VALLEY RANCH WELL #1
SINGLE LINE AND LOAD CALCULATIONS

MOHAVE COUNTY ARIZONA

SHEET
E002
6 OF 20 SHEETS

SCI PROJECT
184.16.07.00

DWG FILE: U110_E002.dwg 22Jan PLOTTED: Jan 16, 2003 jcm

PANEL TAG No. PNL-100
LOCATION ELECTRICAL EQUIPMENT LINE UP
BUS AMPACITY 100
VOLTS 480
PHASE/WIRE CONFIG. 3-PHASE/4-WIRE
REMARKS

NEMA TYPE/MOUNTING 3R/SURFACE
MAIN DEVICE 100A MCB
AIC RATING 10K
FED FROM T-100
ACCESSORIES TVSS
NOTE 1: PROVIDE BREAKER PER MANUF. RECOMMENDATIONS

LOAD VA PHASE A	LOAD VA PHASE B	LOAD VA PHASE C	LOAD DESCRIPTION	WIRE SIZE*	DEMAND	BKR	BKR. NO.		BKR	DEMAND	WIRE SIZE*	LOAD DESCRIPTION	LOAD VA PHASE A	LOAD VA PHASE B	LOAD VA PHASE C
500			CHLORINE BOOSTER PUMP	#12	1.00	15/2	1	2	100/2	1.24	#4	MIN POWER ZONE	5032		
	500		CHLORINE BOOSTER PUMP	#12	1.00		3	4		1.24	#4	MIN POWER ZONE		5032	
		500	CHLORINE BOOSTER PUMP	#12	1.00		5	6	20/1			SPARE			0
0			SPARE			20/1	7	8				SPACE	0		
	0		SPARE			20/1	9	10				SPACE		0	
		0	SPARE			20/1	11	12				SPACE			0
0			SPARE			15/2	13	14				SPACE	0		
	0		SPARE			15/2	15	16				SPACE		0	
		0	SPARE			15/2	17	18				SPACE			-
0			SPACE				19	20				(FUTURE IRRIGATION PUMP)	0		
	0		SPACE				21	22				(FUTURE IRRIGATION PUMP)		0	
		0	SPACE				23	24				(FUTURE IRRIGATION PUMP)			0
0			SPACE				25	26				TVSS (NOTE 1)	0		
	0		SPACE				27	28				TVSS (NOTE 1)		0	
		0	SPACE				29	30				TVSS (NOTE 1)			0
500	500	500	CONNECTED VA									CONNECTED VA	5032	5032	0
500	500	500	DEMAND VA									DEMAND VA	5050	3797	0

*- Each branch circuit phase conductor shall have an equipment grounding conductor sized per N.E.C. Article 250

	VA	AMPS
TOTAL PANEL CONNECTED LOAD	10274	12.36
TOTAL PANEL DEMAND LOAD	12037	14.54
PANEL DEMAND FACTOR	117%	

	A	B	C
TOTAL CONNECTED VA - PER PHASE	5032	5032	500
TOTAL DEMAND VA - PER PHASE	5050	4797	500
TOTAL DEMAND PHASE AMPS	42.1	40.7	2.0

A 3-PHASE PANEL SCHEDULE
N.T.S.

PANEL TAG No. MPB-100
LOCATION ELECTRICAL EQUIPMENT LINEUP
BUS AMPACITY 125A
VOLTS, PHASE, WIRE 240 VOLTS/1-PHASE, 3-WIRE
REMARKS 25KVA MIN-POWER ZONE

NEMA TYPE/MOUNTING 3R/SURFACE
MAIN DEVICE 125A MCB
AIC RATING 10K
FED FROM PNL-100
ACCESSORIES

LOAD VA PHASE A	LOAD VA PHASE B	LOAD DESCRIPTION	WIRE SIZE	DEMAND	BKR	BKR. NO.		BKR	DEMAND	WIRE SIZE	LOAD DESCRIPTION	LOAD VA PHASE A	LOAD VA PHASE B
3600		CHLORINATION HOUSE- BLVCO	#4	1.25	30/1	1	2	20/2	1.25	#12	RTU CABINET AC UNIT NO.1	721	
	20	WELL SITE FLOWMETER	#12	1.25	20/1	3	4		1.25	#12	RTU CABINET AC UNIT NO.1		721
0		SPARE			20/1	5	6	20/1	1.25	#12	POLE LIGHTING	0	
	360	SITE RECEPTACLES	#12	1.00	20/1	7	8	20/1	1.25	#12	SITE LIGHTING		840
0		SPARE			20/2	9	10	20/1	1.25	#12	POWER QUALITY METER	240	
	0	SPARE				11	12	20/1	1.25	#12	POLE RECEPTACLE		180
771		SSS AC	#12	1.25	20/2	13	14	20/1	1.25	#12	RTU CABINET	180	
	771	SSS AC	#12	1.25		15	16	20/1			SPARE		0
0		SPARE			20/1	17	18	20/1			SPARE	0	
	0	SPACE				19	20				SPACE		0
0		SPACE				21	22				SPACE	0	
	0	SPACE				23	24				SPACE		0
4371	1131	CONNECTED VA									CONNECTED VA	1151	1911
4430	1427	DEMAND VA									DEMAND VA	1440	2370

*- Each branch circuit phase conductor shall have an equipment grounding conductor sized per N.E.C. Article 250

	VA	AMPS
TOTAL PANEL CONNECTED LOAD	6534	35.81
TOTAL PANEL DEMAND LOAD	8007	44.40
PANEL DEMAND FACTOR	123%	

	A	B
TOTAL CONNECTED VA - PER PHASE	5532	3083
TOTAL DEMAND VA - PER PHASE	5860	3787
TOTAL DEMAND PHASE AMPS	47.2	31.6

B 1-PHASE PANEL SCHEDULE
N.T.S.

SHORT CIRCUIT CALCULATIONS	
DEFINITIONS	FORMULAS
ISC = SHORT CIRCUIT CURRENT (AMPS)	3 PH: I = 1.732 x L x I sc / M x C x V LL
M = NUMBER OF CONDUCTORS/PHASE	
L = LENGTH OF CONDUCTOR (FEET)	
C = CONSTANT FROM TABLE OF "C"	1 PH: I = 2 x L x I sc / N x C x V LL
Isc = AVAILABLE SHORT-CIRCUIT AMPS	
V LL = LINE TO LINE VOLTAGE (VOLTS)	
V p = PRIMARY VOLTAGE	1 PH XFMR: I = Isc x Vs x % Z / 100,000 x X VA
V s = SECONDARY VOLTAGE	
% Z = TRANSFORMER % IMPEDANCE	

(SC-1)

R = 1.732 x 25 / 8333 x 4,924 / 2300 = 0.0103

M = 1 / (1 + 0.0103) = 0.9898

ISC(1) = 4,924 x 0.9898 = 4,874 A

(SC-2)

R = 1.732 x 25 / 8030 x 4,874 / 2300 = 0.0061

M = 1 / (1 + 0.0061) = 0.9940

ISC(2) = 4,874 x 0.9940 = 4,848 A

(SC-3)

R = 1.732 x 25 / 8253 x 4,848 / 2300 = 0.0121

M = 1 / (1 + 0.0121) = 0.99

ISC(3) = 4,848 x 0.99 = 4,801 A

(SC-4)

R = 1.732 x 25 / 1356 x 4,801 / 2300 = 0.0541

M = 1 / (1 + 0.0541) = 0.9451

ISC(4) = 4,801 x 0.9451 = 4,537 A

(SC-5) TRANSFORMER (SECOND SECONDARY BREAKER)

I s = 3,683 x 4157 / 100000 = 15.316

M = 1 / (1 + 0.316) = 0.944

Vp/Vs = 2400 / 480 = 5

ISC(5) = 15,316 x 0.944 x 5 = 2,596 A

(SC-6)

R = 1 / 1 x 25 / 8436 x 2,660 / 240 = 0.0703

M = 1 / (1 + 0.0703) = 0.9343

ISC(6) = 2,660 x 0.9343 = 2,410 A

C SHORT CIRCUIT CALCULATIONS
N.T.S.

BOX PRELIMINARY NOT FOR CONSTRUCTION

DIL engineering & controls
8550 N. Cedar Ave. Ste. 1000 Fresno, CA 93711

1	ADD REV. OF COMMENTS	GAF	DI	1-9-2008	

SCALE (V) NONE
SCALE (V) NONE
DRAWN BY: GAF
CHECKED BY: DDS
DATE: 4/4/2008

Stanley Consultants INC
5820 S. Eastern Avenue, Suite 300
Las Vegas, Nevada 89119
(702) 361-3341 Fax (702) 361-1713
www.stanleyconsultants.com

RHODES HOMES ARIZONA, LLC

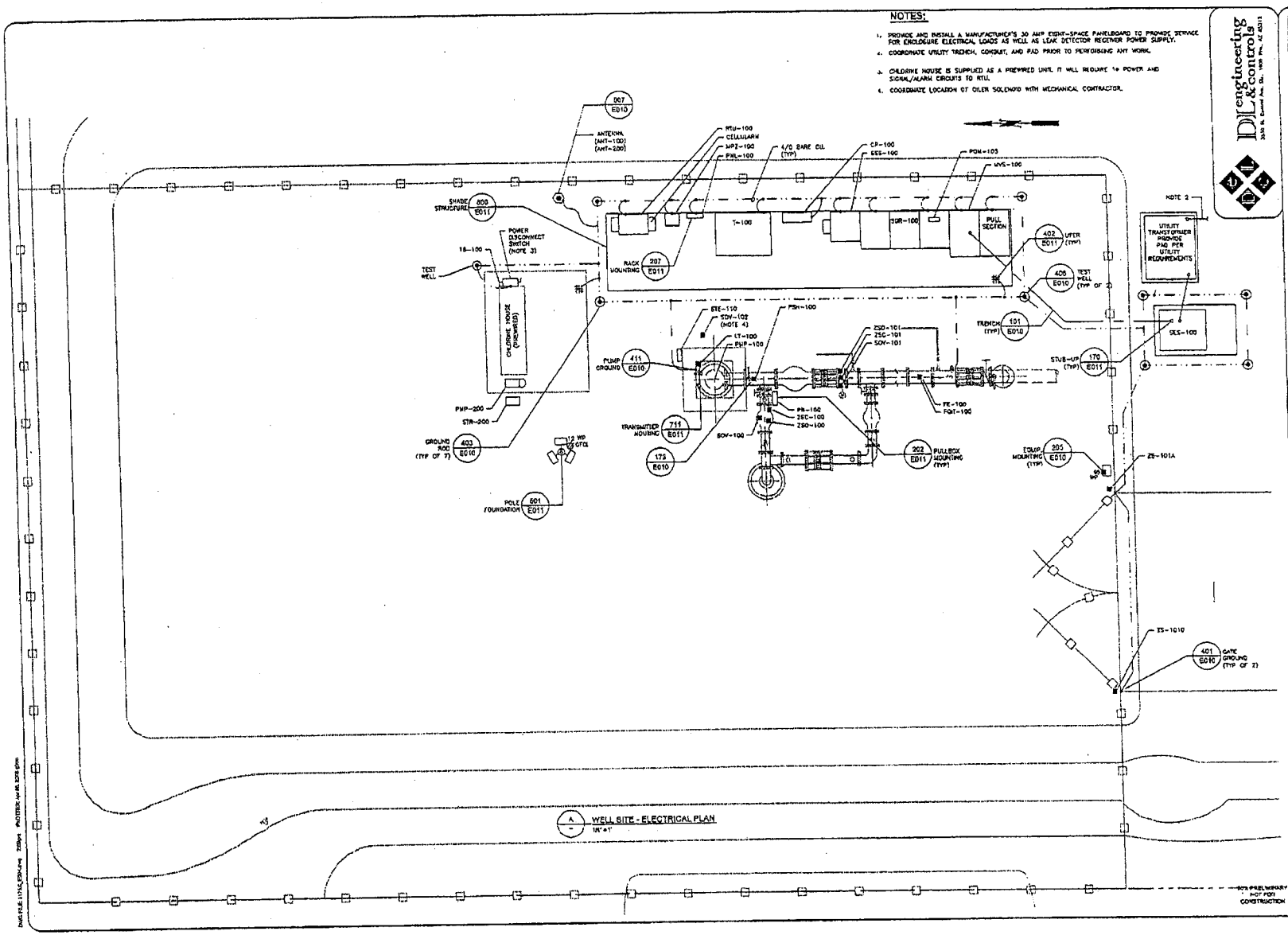
GOLDEN VALLEY RANCH WELL #1
PANEL SCHEDULE AND SHORT CIRCUIT CALCS
MOHAVE COUNTY ARIZONA

SHEET
E003
9 OF 20 SHEETS

SC PROJECT
1648.07.03

NOTES:

1. PROVIDE AND INSTALL A MANUFACTURER'S 30 AMP EIGHT-SPACE PANELBOARD TO PROVIDE SERVICE FOR ENCLOSURE ELECTRICAL LOADS AS WELL AS LEAK DETECTOR RECEIVER POWER SUPPLY.
2. COORDINATE UTILITY TRENCH, CONDUIT, AND PAD PRIOR TO PERFORMING ANY WORK.
3. CHLORINE HOUSE IS SUPPLIED AS A PREWIRED UNIT. IT WILL REQUIRE 1ø POWER AND SIGNAL/ALARM CIRCUITS TO RTU.
4. COORDINATE LOCATION OF OILER SOLENOID WITH MECHANICAL CONTRACTOR.



A WELL SITE - ELECTRICAL PLAN
1/4"=1'

90% PRELIMINARY - NOT FOR CONSTRUCTION

DJ engineering & Controls
3630 N. Central Ave. Ste. 1600 Ph. AZ 85013

1	AHCD REVIEW COMMENTS	CAV	1/15/08

SCALE (H) 1/4"=1'
SCALE (V) 1/4"=1'
DRAWN BY CAP
CHECKED BY BCD
DATE 1/4/2008

Stanley Consultants INC.
3020 S. Country Club Rd., Suite 220
Las Vegas, NV 89109 Tel (702) 364-1700
www.stanleyconsultants.com

RIVOCES I HOWES ARIZONA LLC

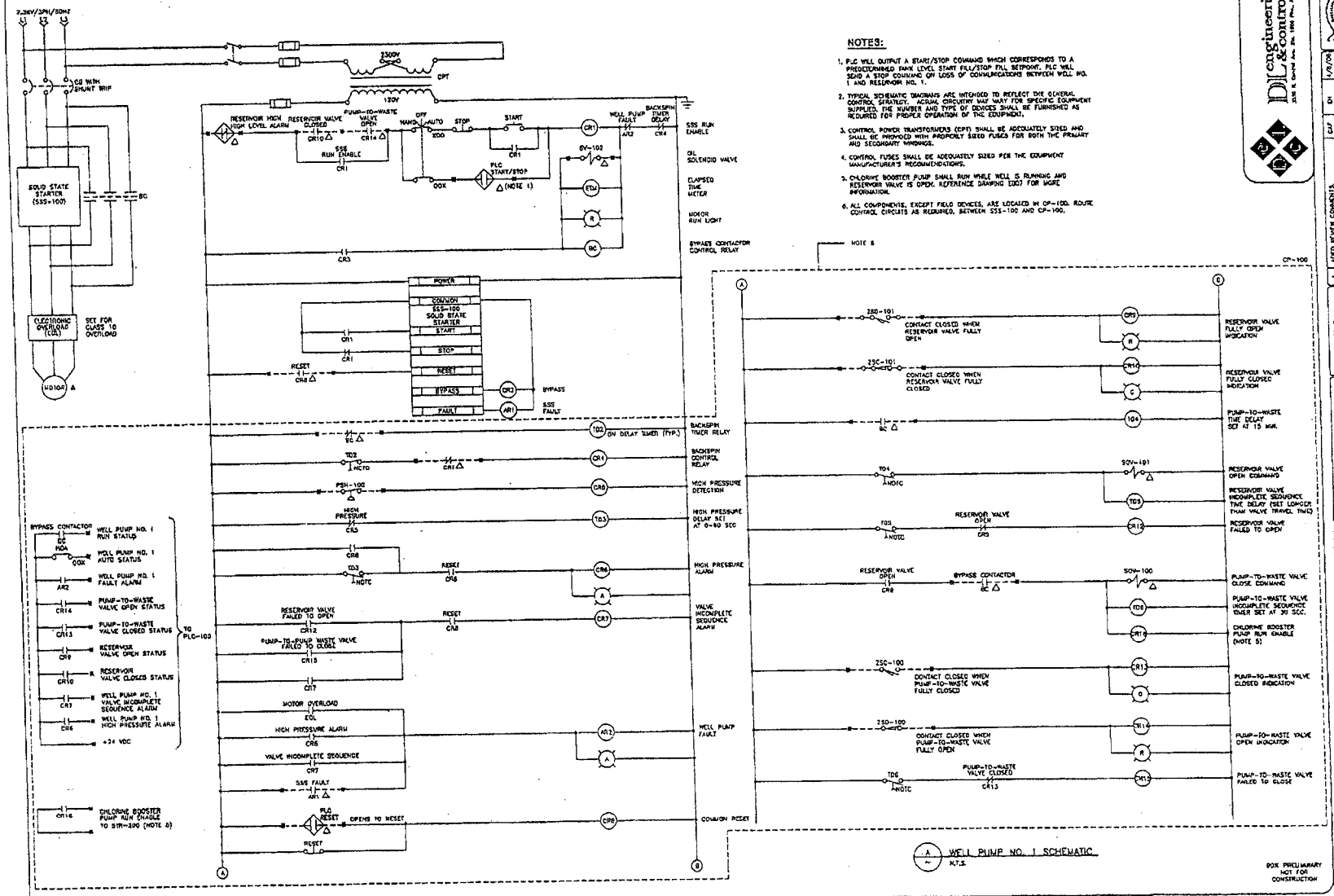
GOLDEN VALLEY RANCH WELL #1
POWER AND GROUNDING PLAN

MOHAVE COUNTY

SHEET E004
10 OF 20 SHEETS

SCI PROJECT/ TE148.07.02

DWG FILE: 1015_E004.dwg 2006ps PLOTTED: Jan 08, 2008 gmm



WELL PUMP NO. 1 SCHEMATIC
N.T.S.

NOTES:

1. PLC WILL OUTPUT A START/STOP COMMAND WHICH CORRESPONDS TO A PREDETERMINED TANK LEVEL START FILL/STOP FILL SETPOINT. PLC WILL SEND A STOP COMMAND ON LOSS OF COMMUNICATIONS BETWEEN WELL NO. 1 AND RESERVOIR NO. 1.
2. TYPICAL SCHEMATIC DIAGRAMS ARE INTENDED TO REFLECT THE GENERAL CONTROL STRATEGY. ACTUAL CIRCUITRY MAY VARY FOR SPECIFIC EQUIPMENT SUPPLIED. THE NUMBER AND TYPE OF DEVICES SHALL BE FURNISHED AS REQUIRED FOR PROPER OPERATION OF THE EQUIPMENT.
3. CONTROL POWER TRANSFORMERS (CPT) SHALL BE ADEQUATELY SIZED AND SHALL BE PROVIDED WITH PROPERLY SIZED FUSES FOR BOTH THE PRIMARY AND SECONDARY WINDINGS.
4. CONTROL FUSES SHALL BE ADEQUATELY SIZED PER THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
5. CHLORINE BOOSTER PUMP SHALL RUN WHILE WELL IS RUNNING AND RESERVOIR VALVE IS OPEN. REFERENCE DRAWING D007 FOR MORE INFORMATION.
6. ALL COMPONENTS, EXCEPT FIELD DEVICES, ARE LOCATED IN CP-100. ROUTE CONTROL CIRCUITS AS REQUIRED, BETWEEN SSS-100 AND CP-100.

DRAFT PRELIMINARY NOT FOR CONSTRUCTION

DL engineering & controls

1	ADDED REVIEW COMMENTS	CJF	DI	1/8/08

SCALE (V) NONE
SCALE (H) NONE
DRAWN BY CJF
CHECKED BY DI
DATE 1/8/2008

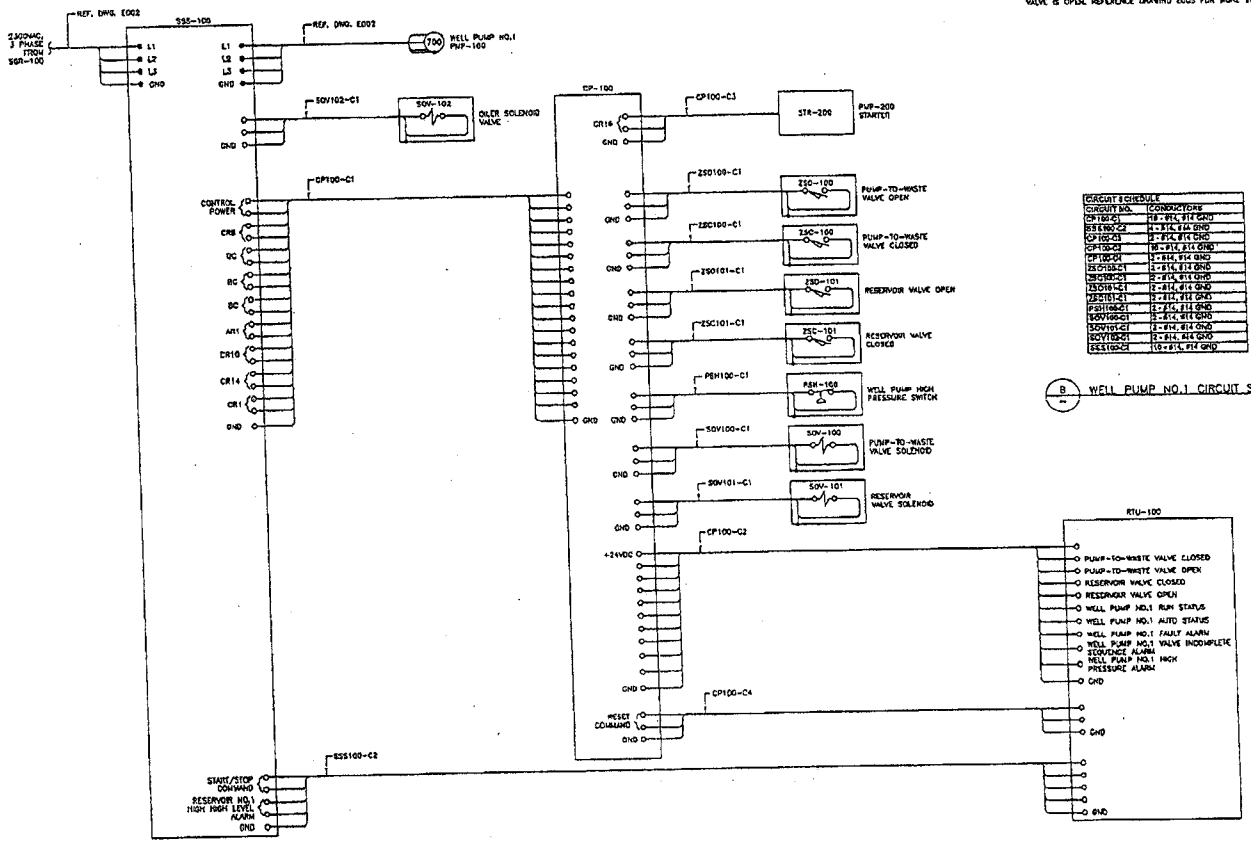
Stanley Consultants INC.

RHODES HOMES ARIZONA LLC
GOLDEN VALLEY RANCH WELL #1
SCHEMATIC/CONNECTION DIAGRAM - SHEET 1
MOLVE COMET

SHEET E005
11 OF 20 SHEETS
SC PROJECT 18448.07.01

NOTES:

1. TYPICAL SCHEMATIC DIAGRAMS ARE INTENDED TO REFLECT THE GENERAL CONTROL STRATEGY. ACTUAL CIRCUITRY MAY VARY FOR SPECIFIC EQUIPMENT SUPPLIED. THE NUMBER AND TYPE OF DEVICES SHALL BE FURNISHED AS REQUIRED FOR PROPER OPERATION OF THE EQUIPMENT.
2. CONTROL FUSES SHALL BE ADEQUATELY SIZED PER THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
3. CONNECTIONS TO PLC INPUTS AND OUTPUTS ARE SHOWN IN A SIMPLIFIED MANNER. REFERENCE TYPICAL I/O CONNECTION DIAGRAMS IN RTU DESIGN PACKAGE FOR ADDITIONAL INFORMATION.
4. CHLORINE BOOSTER PUMP SHALL RUN WHILE WELL IS RUNNING AND RESERVOIR VALVE IS OPEN. REFERENCE DRAWING E005 FOR MORE INFORMATION.



A WELL PUMP NO.1 CONNECTION DIAGRAM

CIRCUIT SCHEDULE	
CIRCUIT NO.	CONDUCTORS
CP100-C1	18 - #14, #14 GND
SSS100-C2	4 - #14, #14 GND
CP100-C3	3 - #14, #14 GND
CP100-C2	16 - #14, #14 GND
CP100-C4	3 - #14, #14 GND
ZSO100-C1	2 - #14, #14 GND
ZSC100-C1	2 - #14, #14 GND
ZSO101-C1	2 - #14, #14 GND
ZSC101-C1	2 - #14, #14 GND
ZSO101-C1	2 - #14, #14 GND
ZSC101-C1	2 - #14, #14 GND
PSH100-C1	2 - #14, #14 GND
SOV100-C1	2 - #14, #14 GND
SOV101-C1	2 - #14, #14 GND
SOV102-C1	2 - #14, #14 GND
SSS100-C2	10 - #14, #14 GND

B WELL PUMP NO.1 CIRCUIT SCHEDULE

DIL engineering & controls

1	ISSUED FOR REVIEW COMMENTS	EJV	TDY	1/5/06

SCALE (H) NONE
SCALE (V) NONE
DRAWN BY DJF
CHECKED BY DRD
DATE 1/4/2006

Stanley Consultants INC.

RHODES HOMES ARIZONA, LLC

GOLDEN VALLEY RANCH WELL #1
SCHEMATIC/CONNECTION DIAGRAM
- SHEET 2

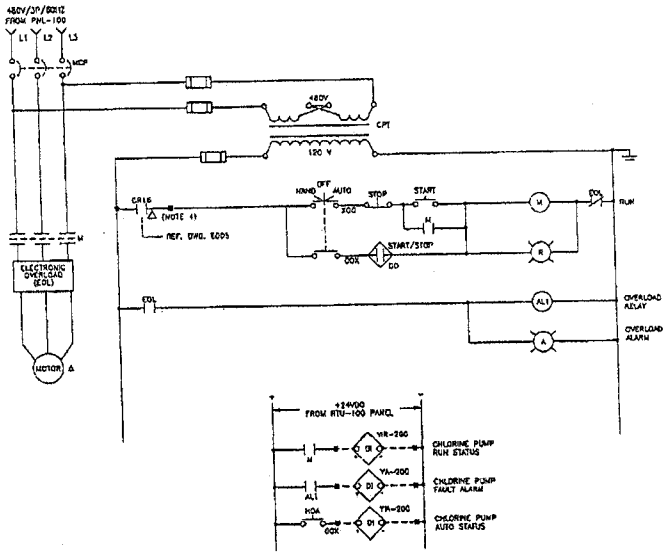
MOHAVE COUNTY, ARIZ.

SHEET E006
12 OF 20 SHEETS

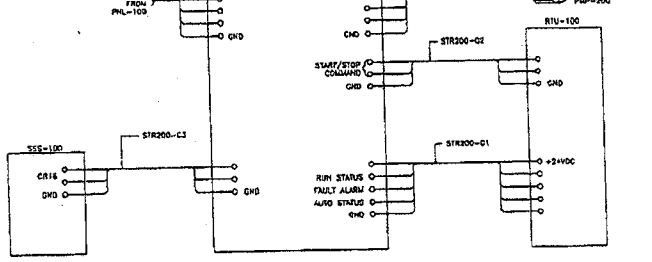
SC PROJECT # 15-48.07.03

80% PRELIMINARY NOT FOR CONSTRUCTION

DWG FILE: V:\FSS_SCAN.dwg 32:Plan PLOTTED: Jul 06, 2006 2:04



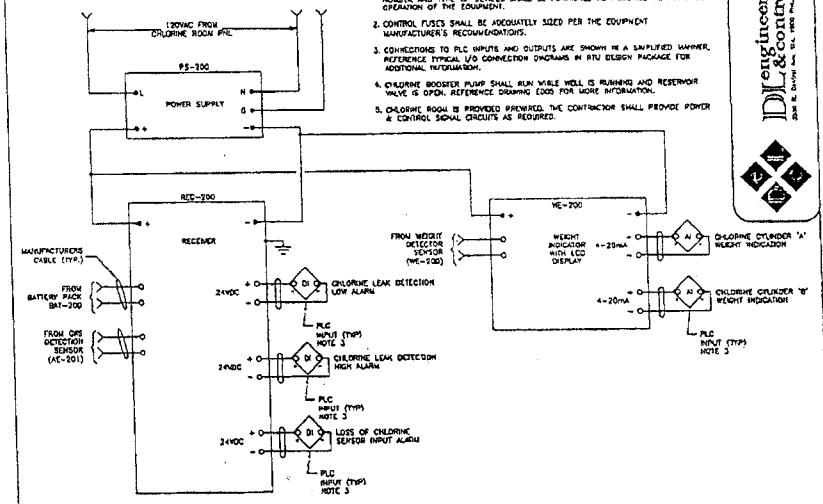
A CHLORINE BOOSTER PUMP SCHEMATIC
N.T.S.



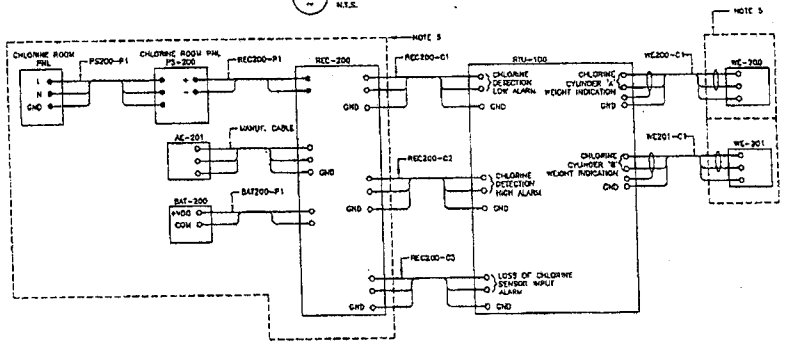
A1 CHLORINE BOOSTER PUMP CONNECTION DIAGRAM
N.T.S.

NOTES:

1. TYPICAL SCHEMATIC DIAGRAMS ARE INTENDED TO REFLECT THE GENERAL CONTROL STRATEGY. ACTUAL CIRCUITRY MAY VARY FOR SPECIFIC EQUIPMENT SUPPLIED. THE NUMBER AND TYPE OF DEVICES SHALL BE FURNISHED AS REQUIRED FOR PROPER OPERATION OF THE EQUIPMENT.
2. CONTROL FUSES SHALL BE ADEQUATELY SIZED PER THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
3. CONNECTIONS TO PLC INPUTS AND OUTPUTS ARE SHOWN IN A SIMPLIFIED MANNER. REFERENCE TYPICAL I/O CONNECTION DIAGRAMS IN RTU DESIGN PACKAGE FOR ADDITIONAL INFORMATION.
4. CHLORINE BOOSTER PUMP SHALL RUN WHILE WELL IS RUNNING AND RESERVOIR VALVE IS OPEN. REFERENCE DRAWING E005 FOR MORE INFORMATION.
5. CHLORINE ROOM IS PROVIDED PREWIRED. THE CONTRACTOR SHALL PROVIDE POWER & CONTROL SIGNAL CIRCUITS AS REQUIRED.



B CHLORINATOR LEAK DETECTOR SCHEMATIC
N.T.S.



S1 CHLORINATOR LEAK DETECTOR CONNECTION DIAGRAM
N.T.S.

CIRCUIT SCHEDULE	
CIRCUIT NO.	CONDUCTORS
STR200-C1	4-#14, #14 GND
STR200-C2	2-#14, #14 GND
STR200-C3	2-#14, #14 GND
REC200-C1	2-#14, #14 GND
REC200-C2	2-#14, #14 GND
REC200-C3	2-#14, #14 GND
REC200-P1	2-#18, #18 GND
AE200-C1	1-#20, #14 GND
BAT200-P1	2-#18, #14 GND
PS200-P1	2-#18, #12 GND
WE200-C1	1-#20, #12 GND
WE201-C1	1-#20, #12 GND

C CIRCUIT SCHEDULE
N.T.S.

90% PRELIMINARY NOT FOR CONSTRUCTION

DL engineering & controls

1	AGENCY REVIEW CONDITIONS	CAF	1/9/08

SCALE (H) NONE
SCALE (V) NONE
DRAWN BY CAF
DESIGNED BY BBO
DATE 1/9/2008

Stanley Consultants INC.

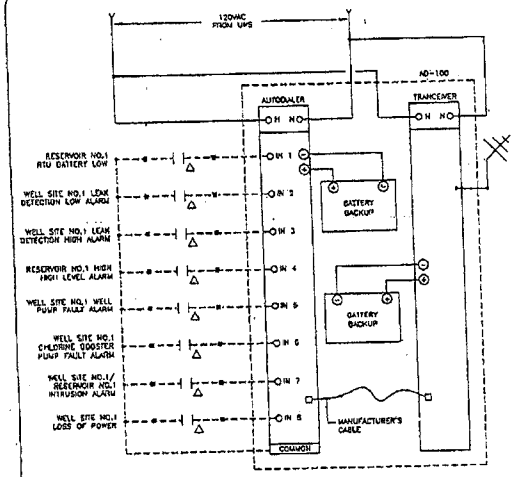
RHODES HOMES ARIZONA, LLC

GOLDEN VALLEY RANCH WELL #1
SCHEMATIC/CONNECTION DIAGRAM
- SHEET 3

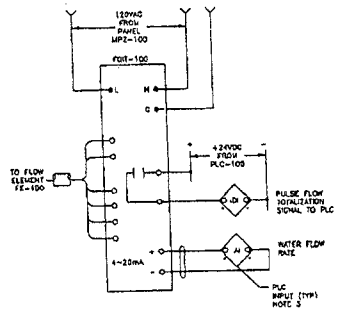
MOHAVE COUNTY ARIZONA

SHEET
E007
13 OF 20 SHEETS

SCI PROJECT
18449.07.03



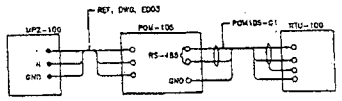
B AUTODIALER SCHEMATIC DIAGRAM
SCHEMATIC



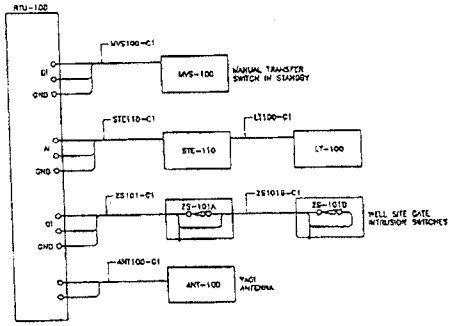
C FLOW TRANSMITTER SCHEMATIC (FQIT-100)
SCHEMATIC

NOTES:

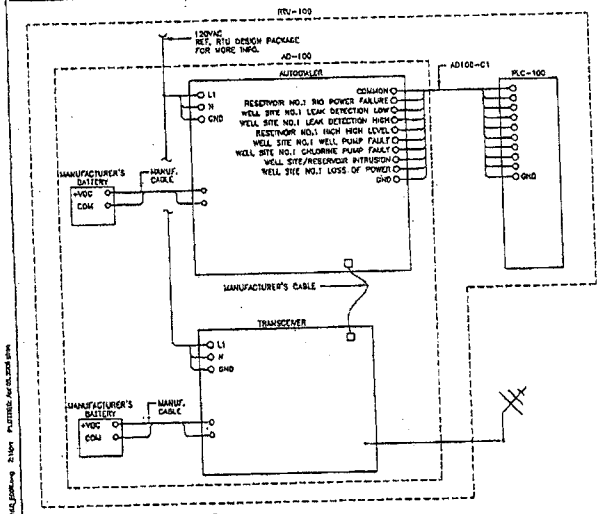
1. TYPICAL SCHEMATIC DIAGRAMS ARE INTENDED TO REFLECT THE GENERAL CONTROL STRATEGY. ACTUAL CIRCUITRY MAY VARY FOR SPECIFIC EQUIPMENT SUPPLIED. THE NUMBER AND TYPE OF DEVICES SHALL BE FURNISHED AS REQUIRED FOR PROPER OPERATION OF THE EQUIPMENT.
2. CONTROL FUSES SHALL BE ADEQUATELY SIZED PER THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
3. CONNECTIONS TO PLC INPUTS AND OUTPUTS ARE SHOWN IN A SIMPLIFIED MANNER. REFERENCE TYPICAL I/O CONNECTION DIAGRAMS IN RTU DESIGN PACKAGE FOR ADDITIONAL INFORMATION.



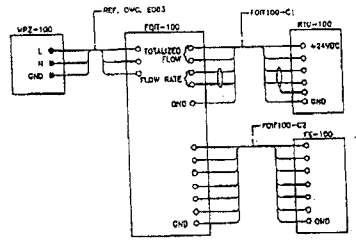
D POWER QUALITY METER CONNECTION DIAGRAM (PQM-105)
CONNECTION



F MISCELLANEOUS CONNECTION DIAGRAM
CONNECTION



B1 AUTODIALER CONNECTION DIAGRAM
CONNECTION



C1 FLOW TRANSMITTER CONNECTION DIAGRAM (FQIT-100)
CONNECTION

CIRCUIT SCHEDULE	
CIRCUIT NO.	CONDUCTORS
AD100-C1	9-#16, #14 GND
FQIT100-C1	2-#14, 1-IS, #14 GND
FQIT100-C2	1-MC, #14 GND
PQM105-C1	1-IS, #14 GND
ZS101-C1	2-#14, #14 GND
ZS101B-C1	2-#14, #14 GND
MVS100-C1	2-#14, #14 GND
STE110-C1	1-IS, #14 GND
LT100-C1	1-MC, #14 GND
ANT100-C1	ANT. CABLE

T CIRCUIT SCHEDULE
NTS

90% PRELIMINARY NOT FOR CONSTRUCTION

DLE engineering & controls
3200 E. Guasti Rd., Ste. 100, Ontario, CA 91761

1	AGEO REVIEW COMMENTS.	CJP	EN	1/9/06

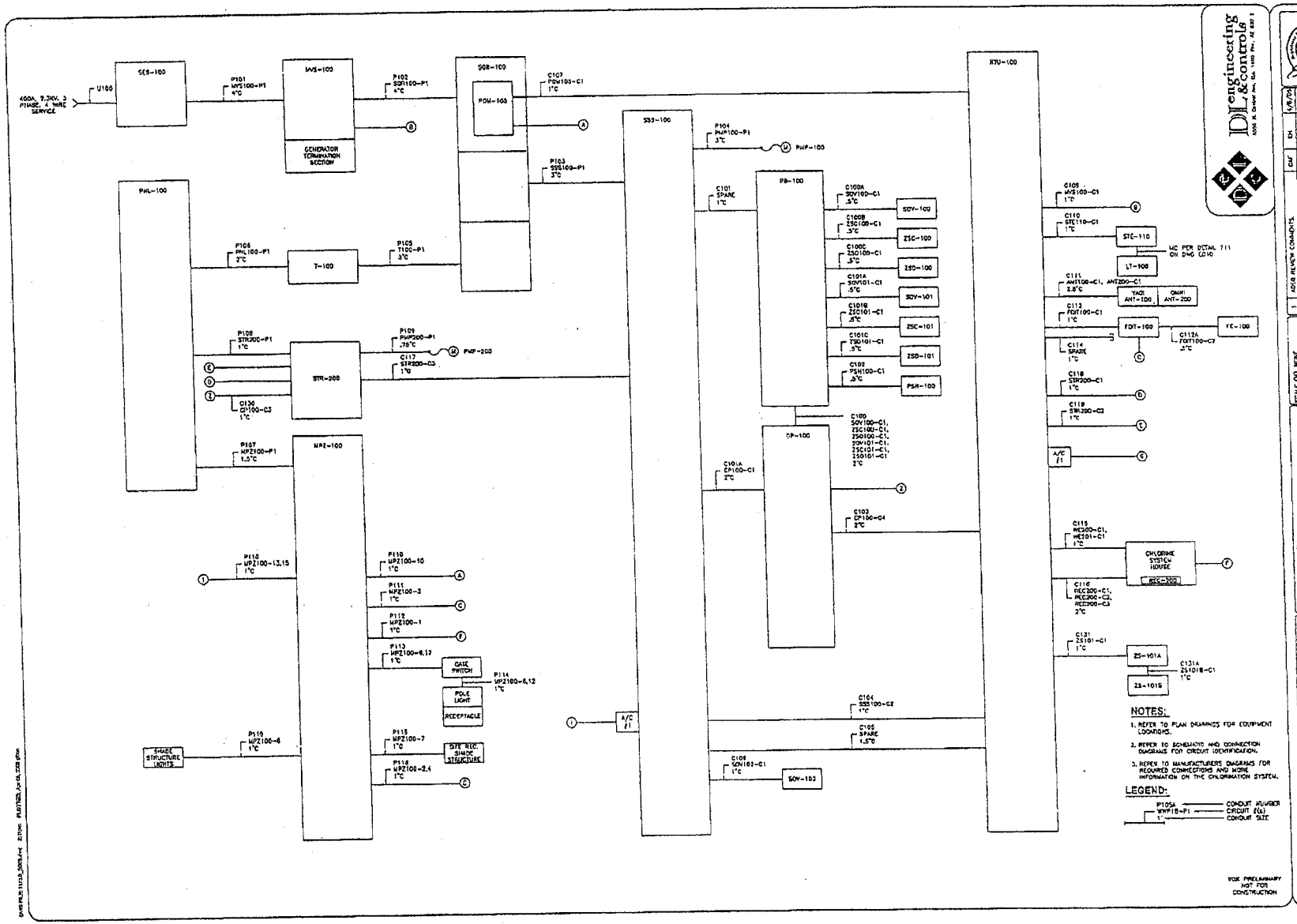
SCALE (V) NONE
SCALE (V) NONE
DRAWN BY CJP
CHECKED BY EDO
DATE 4/4/2005

Stanley Consultants INC.
5469 S. Fashion Square Lane, Suite 200 Murray, Utah 84123 (801) 685-8783 Fax (801) 685-8781 www.stanleyconsultants.com

RHODER HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH WELL #1
SCHEMATIC/CONNECTION DIAGRAM
MOHAVE COUNTY, ARIZONA

SHEET E008
14 OF 30 SHEETS
STA PROJECT 18.413.07.02

DWG FILE: 11142_E008.dwg 2:1Dwg PLOTTED: Apr 05, 2006 9:14



DL engineering & controls
5005 N. Drake Ave., Ste. 1100 Phx., AZ 85013

1	ADOS REVIEW COMMENTS	CJF	DL	1/8/05

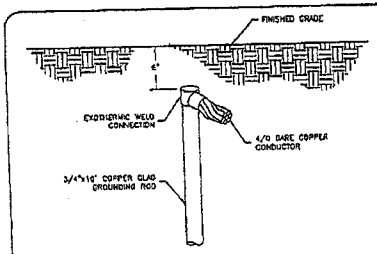
SCALE (V): NONE
SCALE (H): NONE
DRAWN BY: CJF
CHECKED BY: DLO
DATE: 1/8/2005

Stanley Consultants INC.
5875 S. Campus Dr. Suite 200, Tempe, AZ 85283
(480) 921-5300 Fax (480) 366-1763
www.stanleyinc.com

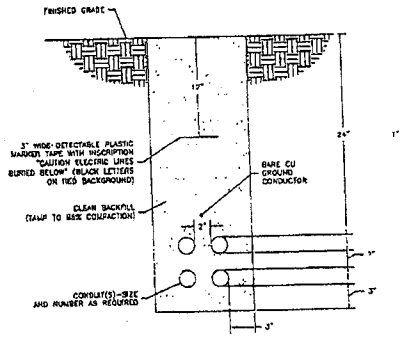
RHODES HOMES ARIZONA, LLC
GOLDEN VALLEY RANCH WELL #1
CONDUIT BLOCK DIAGRAM
MARICOPA COUNTY ARIZONA

SHEET
E009
15 OF 20 SHEETS

SCI PROJECT #
184-1807.00



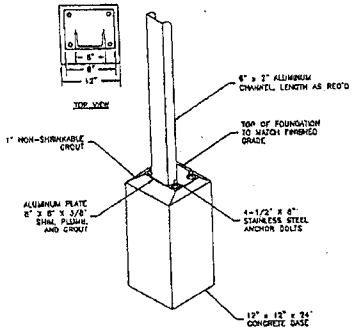
403 TYP — EXOTHERMIC GROUND ROD CONNECTION
NOT TO SCALE



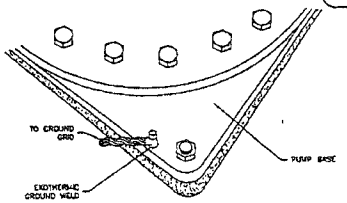
NOTES:

1. GROUND CONDUCTOR SHALL RUN CONTINUOUSLY THROUGH HANDHOLES AND SHALL CONTINUE FROM DUCTBANK INTO SWITCHGEAR OR BUILDING GROUNDING SYSTEM AND SHALL BE BONDED TO EACH RIGID METAL CONDUIT. SIZE TO BE #4/0 UNLESS OTHERWISE INDICATED ON PLANS.
2. ALL DIMENSIONS ARE MINIMUM.

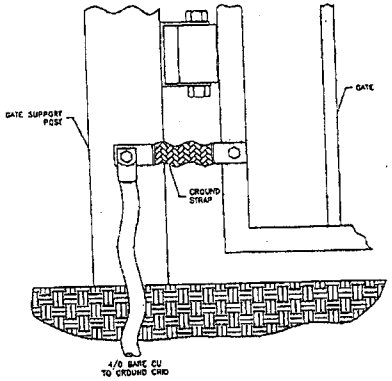
101 TYP — DUCTBANK – DIRECT BURIED
NOT TO SCALE



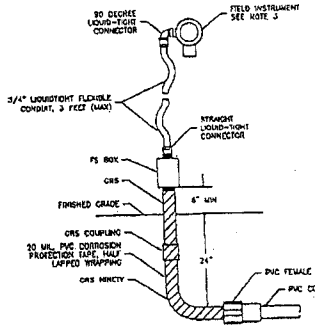
205 TYP — EQUIPMENT MOUNTING
NOT TO SCALE



411 TYP — VERTICAL TURBINE PUMP GROUNDING DETAIL
NOT TO SCALE



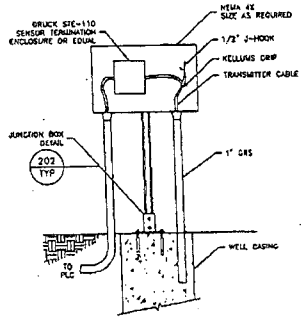
401 TYP — GATE GROUNDING DETAIL
NOT TO SCALE



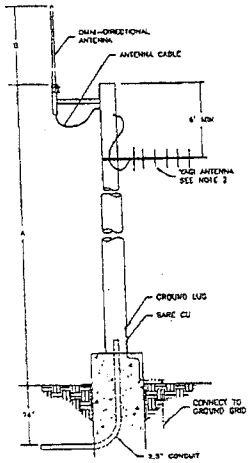
NOTES:

1. WHERE CONDUITS ARE INSTALLED IN A CONCRETE SLAB, THE 24" DIMENSION DOES NOT APPLY. CONDUITS SHALL BE INSTALLED BETWEEN REBAR MATS OR UNDER A SINGLE REBAR MAT.
2. IN CORROSIVE AREAS, PVC COATED GRS SHALL BE USED.
3. MOUNT INSTRUMENT AS PER MANUFACTURERS' RECOMMENDATIONS.
4. INSULATE WATER LINES AND TRANSMITTER TO PREVENT FREEZING.

173 TYP — GRS STUB-UP TO LTC DETAIL
NOT TO SCALE



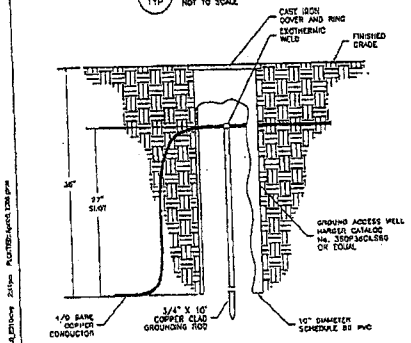
711 TYP — SUBMERSIBLE WELL LEVEL TRANSMITTER MOUNTING DETAIL
NOT TO SCALE



607 TYP — NEW ANTENNA MAST ELEVATION
NOT TO SCALE

NOTE:

1. EXACT DIMENSIONS FOR A AND B SHALL BE COORDINATED WITH OWNER PRIOR TO INSTALLATION.
2. MOUNTING AND ALIGNING OF THE YAGI-TYPE ANTENNA THE CONTRACTOR SHALL COORDINATE ANTENNA INSTALLATION, ALIGNMENT, AND TUNING REQUIREMENTS WITH THE MANUFACTURER.
3. MAST SHALL BE APPROVED BY A REGISTERED STRUCTURAL ENGINEER.



406 TYP — GROUND ROD WITH ACCESS WELL
NOT TO SCALE

90% PRELIMINARY NOT FOR CONSTRUCTION

DLE engineering & controls
2024 W. Chandler Ave., Ste. 1103 Ph.: 480 839-3

1	AGED REVIEW COMMENTS	CJF	DH	4/8/06	

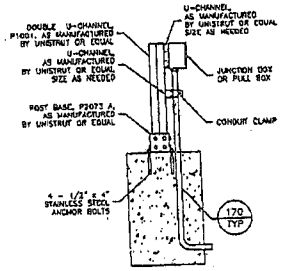
SCALE (H) NONE
SCALE (V) NONE
DRAWN BY CJF
CHECKED BY DCD
DATE 4/8/2006

Stanley Consultants INC.
1906 E. Baseline Avenue, Suite 203
Gilbert, AZ 85233
(480) 926-0100 (480) 926-1193
www.stanleyconsultants.com

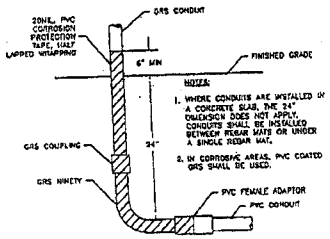
RHODES HOMES ARIZONA LLC
GOLDEN VALLEY RANCH WELL #1
STANDARD DETAILS – SHEET 1
MOHAVE COUNTY ARIZONA

SHEET
E010
16 OF 30 SHEETS
SCI PROJECT/ 18449.07.03

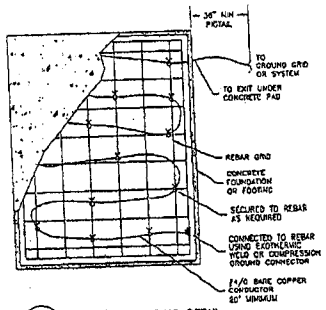
DWG FILE: 17148.DWG Layout: 2 Plotted: April 4, 2006 2:19 pm PLOTTED BY: David Clark



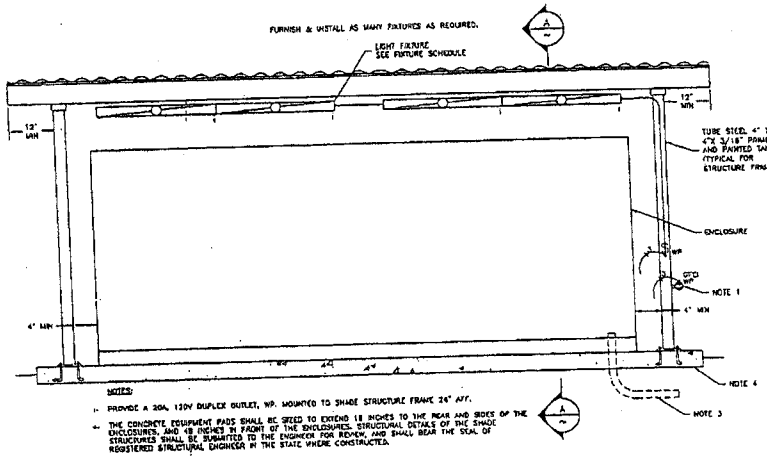
202 TYP JUNCTION BOX MOUNTING DETAIL
NOT TO SCALE



170 TYP GRS STUB UP DETAIL
NOT TO SCALE



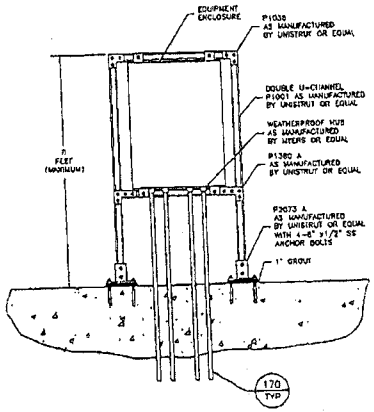
402 TYP "UFER" GROUNDING DETAIL
NOT TO SCALE



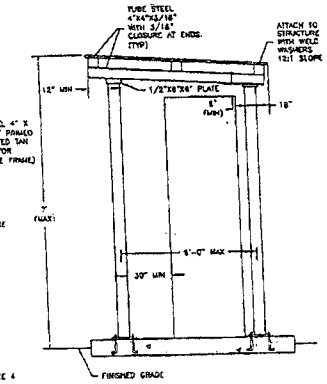
NOTES:

1. PROVIDE A 20A, 120V DUPLEX OUTLET, WP, MOUNTED TO SHADE STRUCTURE FRAME 24" AFF.
2. THE CONCRETE EQUIPMENT PADS SHALL BE SIZED TO EXTEND 18 INCHES TO THE REAR AND SIDES OF THE ENCLOSURES, AND 48 INCHES IN FRONT OF THE ENCLOSURES. STRUCTURAL DETAILS OF THE SHADE STRUCTURES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW, AND SHALL BEAR THE SEAL OF REGISTERED STRUCTURAL ENGINEER IN THE STATE WHERE CONSTRUCTED.
3. INSTALL CONDUITS AS REQUIRED.
4. REFER TO SIMILAR PAD DETAIL SHOWN ON 4-MP2 FOR MORE INFORMATION.

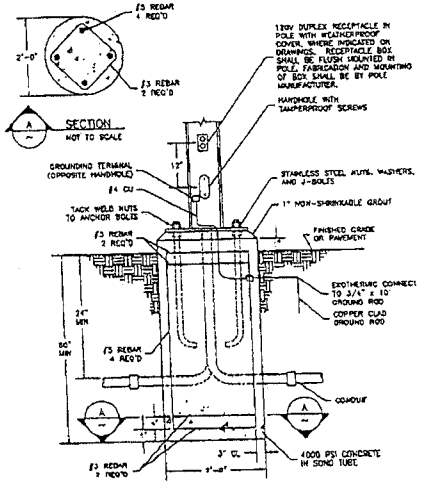
800 TYP EQUIPMENT SHADE STRUCTURE ELEVATION
NOT TO SCALE



207 TYP EQUIPMENT RACK DETAIL - NON-CLASSIFIED AREAS
NOT TO SCALE



A SECTION
NOT TO SCALE



A SECTION
NOT TO SCALE

501 TYP AREA LIGHTING POLE MOUNTING SHORT BASE
NOT TO SCALE

90% PRELIMINARY NOT FOR CONSTRUCTION

DIL engineering & controls
2008 N. Dunlap Ave., Box 1100 Phx., AZ 85028

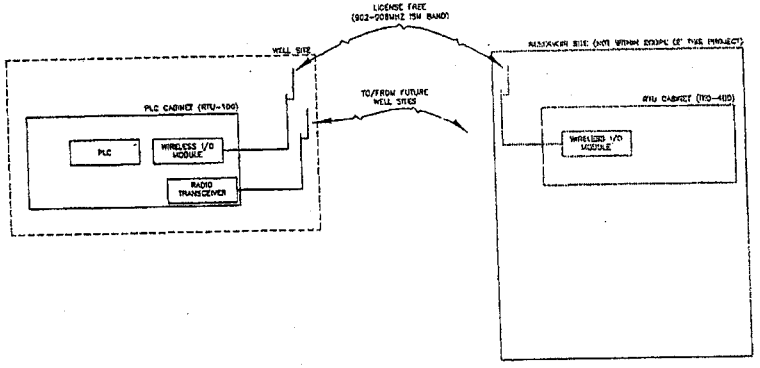
1	ADED REVIEW COMMENTS	CAF	1/8/05

SCALE (H) NONE
SCALE (V) NONE
DRAWN BY CAF
CHECKED BY BDJ
DATE 4/4/2004

Stanley Consultants INC.
3655 E. Sunset Road, Suite 200
Las Vegas, Nevada 89120
(702) 436-9700 Fax 436-9703
www.stanleyfw.com

PHOENIX HOMES ARIZONA LLC
GOLDEN VALLEY RANCH WELL #1
STANDARD DETAILS - SHEET 2
MOHAVE COUNTY ARIZONA

SHEET
E011
17 OF 20 SHEETS
SS PROJECT
18448.07.03



A/2 SYSTEM COMMUNICATIONS/TELEMETRY DIAGRAM

90% PRELIMINARY
NOT FOR
CONSTRUCTION

DL engineering & controls
3434 N. Central Ave., Ste. 1900 Phx., AZ 85012

1	ADOD REVIEW COMMENTS	GAF	BH	1/9/06

SCALE (H) NONE
SCALE (V) NONE
DRAWN BY GAF
CHECKED BY BHD
DATE 1/9/2006

Stanley Consultants INC.
3434 N. Central Avenue, Suite 200
Phoenix, Arizona 85012 (602) 341-1570
www.stanleyinc.com

RIDDER HOMES ARIZONA, LLC

GOLDEN VALLEY RANCH WELL #1
SYSTEM COMMUNICATIONS
ARCHITECTURE

LA PAZ COUNTY ARIZONA

SHEET
E012
12 OF 20 SHEETS

SCI PROJECT
1848.07.03

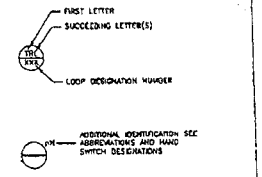
ISA INSTRUMENT IDENTIFICATION TABLE

FIRST LETTERS			SUCCEEDING LETTERS		
MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A ANALYZER		ALARM		
B BURNER, COMBUSTION				
C CONDUCTIVITY			CONTROL	CLOSED
D DENSITY	DIFFERENTIAL			
E VOLTAGE		ELEMENT		
F FLOW	RATIO			
G GAUGE		GLASS, VIEWING DEVICE		
H HAND				HIGH
I CURRENT		INDICATE		
J POWER	SCAN			
K TIME, TIME SCHED.	TIME RATE OF CHANGE		CONTROL STATION	
L LEVEL		LIGHT		LOW
M MOTION				MIDDLE
N INTRUSION				NORMAL
O TORQUE		ORIFICE, RESTRICTION		OPEN
P PRESSURE		POINT CONNECTION		STOP
Q QUANTITY	INTEGRATE, TOTALIZE	RECORD, OR PRINT		RUN OR REMOTE
R RADIATION			SWITCH	START
S SPEED, FREQUENCY	SAFETY		TRANSMIT	
T TEMPERATURE				
U MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V VIBRATION			VALVE, LOUVER	
W WEIGHT		WELL		
X MOTOR	X-AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y EVENT, STATE, OR PRESENCE	Y-AXIS		RELAY, COMPUTE, CONVERT	
Z POSITION	Z-AXIS		DRIVER, ACTUATOR, FINAL CONTROL ELEMENT	

P&ID ABBREVIATIONS

A	AMPERE	JB	JUNCTION BOX	PRES	PRESSURE
AFD	ADJUSTABLE FREQUENCY DRIVE	L, LO	LOW	PS	PRESSURE SWITCH
AI	ANALOG INPUT	LAN	LOCAL AREA NETWORK	PSI	POUNDS PER SQUARE INCH
AIC	AMPS INTERRUPTING CAPACITY	LC	LOOP CONTROLLER	PV	PROCESS VARIABLE
ARV	AIR RELIEF VALVE	LCP	LOCAL CONTROL PANEL	RAS	RETURN ACTIVATED SLUDGE
AO	ANALOG OUTPUT	LOS	LOCK-OFF-STOP	RAW	RAW WATER
AS	AIR SUPPLY	LR	LOCAL/REMOTE	REM	REMOTE
ATS	AUTOMATIC TRANSFER SWITCH	LS	LEVEL SW. (FLOAT) SWITCH	RF	RADIO FREQUENCY
AUTO	AUTOMATIC	M	MOTOR	RIO	REMOTE INPUT OUTPUT
CB	CIRCUIT BREAKER	MA	MANUAL/AUTO	RS	RAW SEWAGE
CL2	CHLORINE	MAX	MILLIAMP	RSP	RAW SEWAGE PUMP
CON	CONTACTOR	MC	MANUFACTURE CABLE	RST	RESET
CU	COPPER	MCC	MOTOR CONTROL CENTER	RTD	RESISTANCE TEMPERATURE DETECTOR
CV	CONTROL VALVE	MCP	MOTOR CIRCUIT PROTECTOR	RTU	REMOTE TELEMETRY UNIT
DCS	DISTRIBUTED CONTROL SYSTEM	MF(RS)	MANUFACTURER(S)	RUN	RUN (FAST SPEED)
DI	DISCRETE INPUT	MGD	MILLION GALLONS PER DAY	RUN-S	RUN (SLOW SPEED)
DO	DISCRETE OUTPUT, DISCRETE OUTPUT	MGL	MILLIGRAMS PER LITER	RVC	RESERVOIR CONTROL VALVE CLOSED
DP	DIFFERENTIAL PRESSURE	MN	MANHOLE	RVO	RESERVOIR CONTROL VALVE OPEN
DWG	DRAWING	MLR	MIXED LIQUOR RETURN	SB	SLUDGE BLANKET
EGO	EMERGENCY GAS OFF	MO	MOTOR	SEQ	SERVICE ENTRANCE EQUIPMENT
ETM	ELAPSED TIME METER	MOD	MODULATED	SES	SERVICE ENTRANCE SECTION
ETM	ELAPSED TIME METER (FAST SPEED)	MTU	MASTER TELEMETRY UNIT	SLC	SINGLE LOOP CONTROLLER
ETM-S	ELAPSED TIME METER (SLOW SPEED)	NPW	NON-POTABLE WATER	SLOS	START-LOCK-OFF-STOP
EOL	ELECTRONIC OVERLOAD	NS	NITROGEN SUPPLY	SO2	SULFUR DIOXIDE
EXIST	EXISTING	NTU	TURBIDITY	SOV	SOLENOID OPERATED VALVE
FA	FOUL AIR	O/C	OPEN / CLOSE	SP	SET POINT
FC	FAIL CLOSED	OCV	OPEN-CLOSE-AUTO	SPD	SPEED
FE	FINAL EFFLUENT	OCR	OPEN-CLOSE-REMOTE	SPR	SPARE
FR	FORWARD-REVERSE	OIT	OPERATOR INTERFACE TERMINAL	SS	START/STOP (MAINTAINED)
FS	FLOAT SWITCH	OL	OVERLOAD	SSS	SOLID STATE STARTER (SOFT START)
FVMV	FULL VOLTAGE NON-REVERSING	OO	ON/OFF (MAINTAINED)	SST	MOTOR STARTER
FW	FINISHED WATER	OOA	ON-OFF-AUTO	TAH	TEMPERATURE ALARM HIGH
GND	GROUND	OOR	ON-OFF-REMOTE	T/M	TEMPERATURE AND/OR MOISTURE
GAL	GALLONS	OSC	OPEN-STOP-CLOSE	TEMP	TEMPERATURE
GPD	GALLONS PER DAY	PAH	PRESSURE ALARM HIGH	TS	TEMPERATURE SWITCH
GPH	GALLONS PER HOUR	PER	PERMISSIVE	TSS	TOTAL SUSPENDED SOLIDS
GPM	GALLONS PER MINUTE	PLC	PROGRAMMABLE LOGIC CONTROLLER	UC	UNCONTROLLED
HP, HP	HORSE POWER	PNL	PANEL	UFS	UP/STOP/DOWN
H2S	HYDROGEN SULFIDE	PO	PULSE OUTPUT	VAC	VOLT
HMI	HUMAN MACHINE INTERFACE	POS	POSITION	VFD	VARIABLE FREQUENCY DRIVE
HOA	HAND-OFF-AUTO	POT	POTENTIOMETER	VIS	VALVE INCOMPLETE SEQUENCE
I	CURRENT	PPD	POUNDS PER GALLON	W	WATER
I/O	INPUT/OUTPUT	PPH	POUNDS PER HOUR	WAS	WASTE ACTIVATED SLUDGE
IOE	INTERNAL-OFF-EXTERNAL	PPM	PARTS PER MILLION	WW	WASTEWATER
		PR	PAIR	WVC	WASTE VALVE CLOSED
				WVO	WASTE VALVE OPEN
				XMTR	TRANSMITTER
				ZS	POSITION (i.e. LIMIT) SWITCH

TAG NUMBERS AND DESIGNATIONS



HAND SWITCH DESIGNATIONS

ES	EMERGENCY STOP
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
HOAR	HAND-OFF-REMOTE-AUTO
JOA	JOG-OFF-AUTO
LOR	LOCAL-OFF-REMOTE
LR	LOCAL-REMOTE
OC	OPEN-CLOSE
OO	ON-OFF
S/S	START STOP PUSH BUTTONS

LINE SYMBOLS

- MAJOR PROCESS PIPING OR FLOW CHANNEL
- EXISTING PROCESS PIPING
- SECONDARY PROCESS PIPING
- EXISTING SECONDARY PROCESS PIPING
- MISCELLANEOUS PIPING
- EXISTING PIPING AND EQUIPMENT
- FUTURE PIPING AND EQUIPMENT
- ELECTRICAL SIGNAL
- HYDRAULIC SIGNAL
- PNEUMATIC SIGNAL
- ELECTRICAL DIRECTION ARROW
- SIGNAL CONNECTION POINT
- FLOW ARROW FOR PROCESS PIPING
- PROCESS OR SIGNAL LINE GOING TO ANOTHER SHEET (MATCH LETTERS)
- PROCESS OR SIGNAL LINE FROM ANOTHER SHEET (MATCH LETTERS)
- PROCESS LINES CROSSING (NOT CONNECTED)
- INTERNAL SYSTEM SIGNAL LINK (SOFTWARE OR DATA LINK)

P&ID VALVE SYMBOLS

- GATE OR GENERIC VALVE
- 3-WAY VALVE
- 4-WAY VALVE
- ANGLE VALVE
- BUTTERFLY VALVE
- PLUG VALVE
- ECCENTRIC PLUG VALVE
- BALL VALVE
- CHECK VALVE
- SWING CHECK VALVE
- STOP CHECK VALVE
- BALL CHECK VALVE
- PINCH VALVE
- DIAPHRAGM VALVE
- DIAPHRAGM VALVE (ALTERNATE)
- GLOBE VALVE
- HAND VALVE
- KNIFE VALVE
- MOTORIZED VALVE ACTUATOR
- SOLENOID VALVE 2-WAY
- SOLENOID VALVE 3-WAY
- PUMP CONTROL VALVE
- FLOW CONTROL VALVE
- PRESSURE RELIEF VALVE
- VACUUM RELIEF VALVE
- PRESSURE REGULATOR WITH REMOTE PROCESS CONNECTION
- PRESSURE REGULATOR SELF CONTAINED
- AIR RELEASE VALVE

P&ID EQUIPMENT AND PROCESS SYMBOLS

- METERING PUMP WITH MANUAL STROKE CONTROL
- ROTARY LOBE PUMP
- SUBMERSIBLE MIXER
- ACTUATOR
- SUBMERSIBLE PUMP
- DIESEL GENERATOR
- CENTRIFUGAL PUMP
- BLOWER
- LIFT PUMP
- MOTOR OR MOTOR ACTUATOR
- PNEUMATIC ACTUATOR
- SOLENOID
- VERTICAL TURBINE PUMP
- CHLORINE TANK
- WEIGHT SCALE
- AIR COMPRESSOR
- SLUICE GATE
- SAMPLER
- PROPELLER FLOWMETER ELEMENT
- MAGNETIC FLOWMETER ELEMENT
- CL2 FLOWMETER
- MASS
- INSERTION TYPE MASS FLOW METER
- MASS FLOW METER ANNUBAR TYPE
- DRAIN
- OUTLET SILENCER
- INLET SILENCER
- ROTAMETER
- AIR FILTER
- EJECTOR
- DIAPHRAGM SEAL
- DIFFUSER
- DIAPHRAGM
- Y-TYPE STRAINER
- IPS CORPORATION STOP
- PVC DIFFUSER WITH IPS CORPORATION STOP

SENSING, INDICATION, AND CONTROL SYMBOLS

- ULTRASONIC LEVEL TRANSDUCER
- FLOAT SWITCH
- BEACON — BEACON R=RED, A=AMBER, B=BLUE, G=GREEN
- STOP — INDICATING LIGHT
- HOA — HAND SWITCH
- ORP — ORP ANALYZER
- pH — pH ANALYZER
- ANALYZER ELEMENT
- DO — DO SENSOR
- ORP — ORP SENSOR
- pH — pH SENSOR
- DO — DO ANALYZER
- CL2 — RESIDUAL CL2 CHLORINE SENSOR
- CL2 — RESIDUAL CL2 CHLORINE ANALYZER

NOTE:
REFER TO ISA INSTRUMENT IDENTIFICATION TABLE FOR DEFINITION OF LETTERS GIVEN INSIDE THE BUBBLES. COC REPRESENTS LOOP ID (IF USED). SEE ABBREVIATIONS LIST FOR SUPERSCRIPT AAA.

P&ID INTERFACE SYMBOLS

- PILOT LIGHT X= LENS COLOR, R=RED, G=GREEN, A=AMBER B=BLUE
- FIELD DEVICE
- PANEL DEVICE
- DEVICE MOUNTED IN SUBPANEL
- REMOTE I/O TERMINAL
- HW OR SW FUNCTION
- INTERLOCK DEVICE OR RELAY X=NOTE REF.
- DUAL CHANNEL CURRENT ISOLATOR
- DISCRETE INPUT
- DISCRETE OUTPUT
- ANALOG INPUT
- ANALOG OUTPUT
- PULSE INPUT

90% PRELIMINARY
NOT FOR CONSTRUCTION

DIL engineering & controls
3330 S. Country Club, Ste. 1100 Mesa, AZ 85213

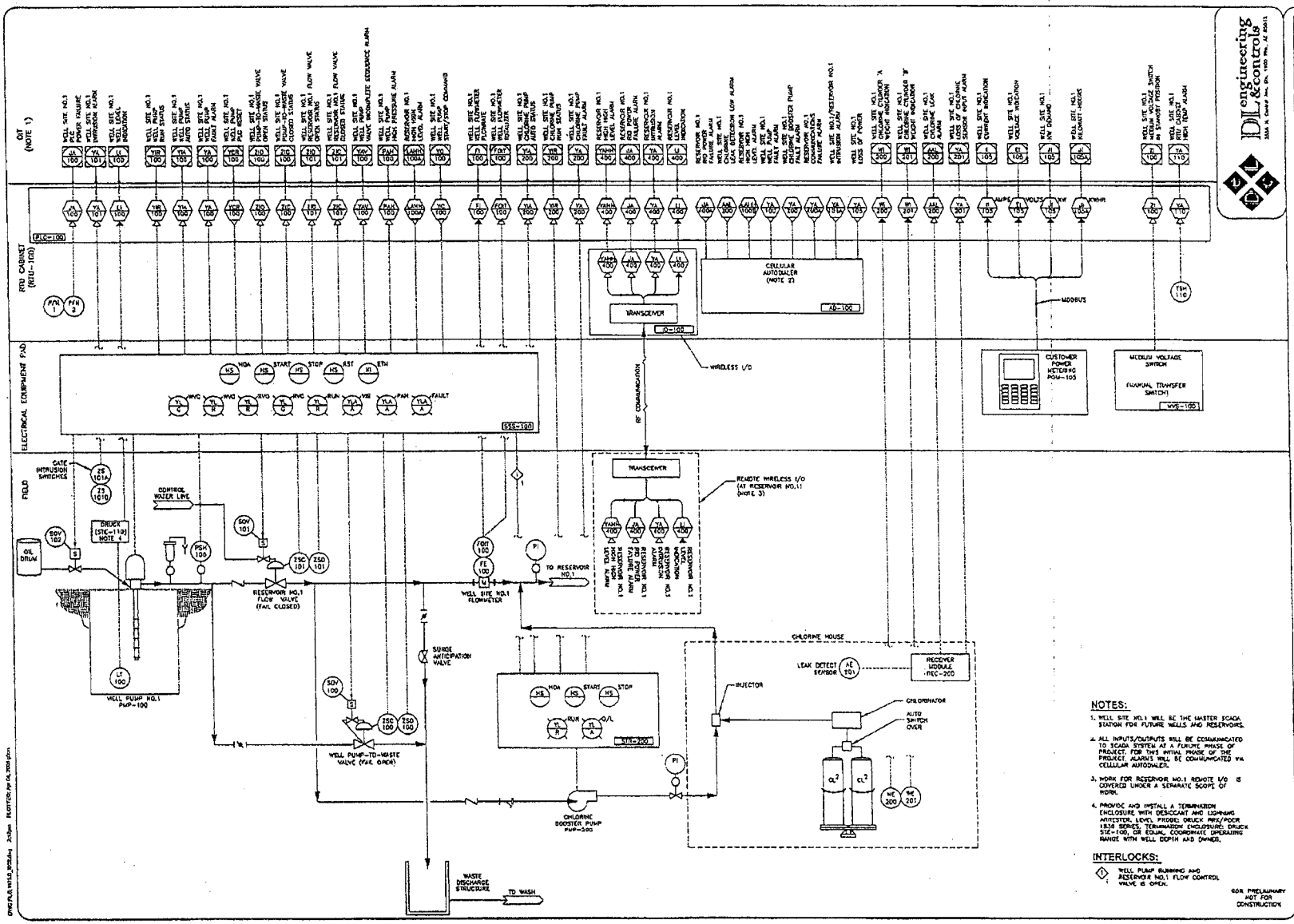
1	ISSUED FOR REVIEW COMMENTS	CJF	DJ

SCALE (H) NONE
SCALE (V) NONE
DRAWN BY CJF
CHECKED BY ROD
DATE 4/8/2008

Stanley Consultants INC.
5500 S. Forest Avenue, Suite 200
Tempe, Arizona 85283
Tel (480) 345-1703 Fax (480) 345-1704
www.stanleyconsultants.com

RHODES HOMES ARIZONA LLC
GOLDEN VALLEY RANCH WELL #1
P AND ID SYMBOLS AND LEGEND
MARICOPA COUNTY ARIZONA

SHEET
1001
19 OF 20 SHEETS
SCI PROJECT
18468.03.00



NOTES:

1. WELL SITE NO.1 WILL BE THE MASTER SCADA STATION FOR FUTURE WELLS AND RESERVOIRS.
2. ALL INPUTS/OUTPUTS WILL BE COMMUNICATED TO SCADA SYSTEM AT A FUTURE PHASE OF PROJECT. FOR THIS INITIAL PHASE OF THE PROJECT, ALARMS WILL BE COMMUNICATED VIA CELLULAR AUTODIALER.
3. WORK FOR RESERVOIR NO.1 REMOTE I/O IS COVERED UNDER A SEPARATE SCOPE OF WORK.
4. PROVIDE AND INSTALL A TERMINATION ENCLOSURE WITH DESICCANT AND LIGHTNING ARRESTER, LEVEL PROBE; DRUCK PRE/POCR 1830 SERIES. TERMINATION ENCLOSURE; DRUCK STC-100; OR EQUAL. COORDINATE OPERATING RANGE WITH WELL DEPTH AND DIAMETER.

INTERLOCKS:

1. WELL PUMP RUNNING AND RESERVOIR NO.1 FLOW CONTROL VALVE IS OPEN.

FOR PRELIMINARY NOT FOR CONSTRUCTION

DL engineering & controls
3444 N. Central Ave., Ste. 1100 Phx., AZ 85012

1	AECO REVIEW COMMENTS				1/4/06

SCALE (H) NONE
SCALE (V) NONE
DRAWN BY DJF
CHECKED BY BJD
DATE 1/4/2006

Stanley Consultants INC.
1426 S. Cherry Avenue, Suite 200
Lakeland, Florida 33803
(863) 686-3247 Fax (863) 686-9762
Certificate of Authorization #2

RHODES HOMES ARIZONA LLC

GOLDEN VALLEY RANCH WELL #1
PROCESS AND INSTRUMENTATION DIAGRAM

LAKESIDE COUNTY ARIZONA

SHEET 1002
20 OF 20 SHEETS

SCI PROJECT 19449.07.01

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALTY

Certificate of Approval to Construct for a Water Distribution System

Applicant Information		ADEQ File Number	20060270 Place ID#: 113600	LTF No. 39584
Name	Perkins Mountain Utility Company	Project Name	Golden Valley Ranch Reservoir 2750 N-1	
Mail Address 1	2215 Hualapai Mountain Road, Suite H			
Mail Address 2		Project Location	Golden Valley, AZ	
City / State / Zip	Kingman, AZ 86409			

Project Type				Project Description
☐	Pressure Main	☒	Storage Tank	Install 1 - 83 foot diameter welded steel tank, approximately 690 linear feet of 12" diameter DIP, approximately 400 linear feet of 24" diameter DIP, approximately 14 linear feet of MLCP steel, approximately 36 linear feet of steel pipe, approximately 52 linear feet of 12" diameter RCP pipe, approximately 303 linear feet of 18" diameter RCP pipe, approximately 55 linear feet of 24" diameter RCP pipe, and related appurtenances to serve the GVR Development
☐	Hydro Tank	☐	Other	

Facility Name	Perkins Mountain Utility Company	Facility Capacity	
Street Address 1	2215 Hualapai Mountain Road, Suite H		
Street Address 2			
City / State / Zip	Kingman, AZ 86409		

PWSID	To Be Assigned	Facility Capacity Affirmation By	Date
County	Mohave		

Design Documents Approved	Date	Site Information				
Application Date	03/09/2006	Location of Distribution System				
Site Plan	03/07/2006	Township	21 N		Range	18 W
Drawings and Specifications	03/07/2006	Section	23	Quarter Section	SE	
Operations & Maintenance Plan		Latitude	35° 11' 21.18"			North
Response Letter	04/17/2006	Longitude	114° 10' 14.28"			West
Other						

Approval to Construct (ATC) the above-described facilities as represented in approved plans documents on file with the Arizona Department of Environmental Quality is hereby given subject to the following provisions:
The General Provision and Special Provision of the Water Distribution System appear on Pages 2 through 2

CERTIFICATE DISTRIBUTION
Original Certificate
Perkins Mountain Utility Company
2215 Hualapai Mountain Road, Suite H
Kingman, AZ 86409

Certificate Copy Only
ADEQ/NRO Reading File
ADEQ/NRO Construction File
Mohave County
Mr. Denis Atwood, P.E.
Mark R. Clark, C.C.M
Stanley Consultants, Inc.
5820 S. Eastern Ave., Suite 140
Las Vegas, NV 89119

Stephen Owens, Director
Arizona Department of Environmental Quality

By [signature] 4-27-06
Kurt J. Harris, P.E., Manager — Date Approved
Water Quality Design Review Unit
Northern Regional Office

Post-it® Fax Note 7671	Date 4/25/06	# of pages ▸ 4.
To MARK CLARK	From C. BRESON	
Co/Dept. STANLEY CONS	Co. ADEQ - NRO	
Phone # (928) 753-0220	Phone # (928) 773-2713	
Fax # (928) 753-0225	Fax # (928) 773-2700	

A-12 admitted

PROJECT: Golden Valley Ranch Reservoir 2750 N-1 CF#: 20060270

General Provisions

1. Notice shall be given to the Northern Regional Office (NRO) in Flagstaff (1 (877) 602-3675) and to the appropriate county department when construction of the project begins to allow for inspection during construction per A R S § 49-104(B)(10) Contact Andy Wilson at (928) 773-2708 at least seven days prior to the start of construction.

2. The project owner shall contact a professional engineer as soon as possible to provide detailed construction inspection of this project (A.A.C. R18-5-507). Upon completion of construction the retained professional engineer shall send to NRO the following:
   a. Engineers Certificate of Completions (attached).
   b. Sealed and signed As-Built plans with construction specifications.
   c. All Construction test data certified by the engineer.
   d. All construction test data; the certified number of an operator, who is certified by the Department at a grade appropriate for the facility, is employed to operate the potable water distribution system. After receipt of the items outlined above, NRO will review the file and, if in order, will issue an Approval of Construction (AOC)

3. Operation of a newly constructed facility shall not begin until an AOC is issued by the Department per A A C. R 185-507(A)

4. A minimum pressure of 20 psi shall be provided at all points in the distribution lines at all times.

5. All materials and products that come into contact with drinking water or drinking water treatment chemicals must comply with NSF Standard 61. Any "or equal" substation shall also meet NSF Standard 61 may be considered if they otherwise comply with A R.S. § 49-353.01.

6. Backflow prevention shall be provided in accordance with A A.C. R 18-4-115 and / or local ordinances

7. The open end of each air relief pipe from automatic valves shall extend at least one foot above grade and shall incorporate pipe elbows to cause the opening, permanently covered with #16 mesh screen, to face downward

8. The certificate voids and supersedes all previous "Approval to Construct" issued previously for this file number.

9. Water line sewer line separation shall meet A.A.C. R 18-5-502. The separation requirements of A.A.C. R 18-5-502 shall extend to all water line services and sewer line services within the right-of-way. Separation of water and sewer line on an individual private property shall meet the requirements of the Uniform Plumbing Code (UPC)

10. This Approval to Construct will become void if an extension of time is not granted by the Department within 90 days after passage of one of the following (A.A C. R18-5-505(E)):
    a Construction does not begin within one year after the date the Approval to Construct is issued, or
    b There is a halt in construction of more than one year, or
    c. Construction is not completed within three years after the date construction begins

11 Construction material used in public water systems, including residential and non-residential facilities connected to the public water system, shall be lead free as defined by A.A C. R 18-4-101(46)

Special Provisions

This "Approval to Construct for a Water Transmission Main" is contingent upon the approval of the "New Well and Source", Elementary Business Plan of the Perkins Mountain Utility Company. The Perkins Mountain Water System is to bear the risk of constructing a Public Water System that cannot be operated until all of the appropriate approvals have been obtained.

4-27-06

End of Provisions

ENGINEER'S CERTIFICATE OF COMPLETION AND FINAL INSPECTION "ECC"

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ) - WATER QUALITY DIVISION J:\shared\WED\APPLICATIONS-DrinkingWater\ECC-DrinkWtr 8/01

ADEQ FILE NO.: _____ - X DRINKING WATER DESIGN *(New separate form now used for WASTEWATER DESIGN)* If separate Drinking Water & Wastewater Approvals to Construct were issued, separate ECCs required	COUNTY: OWNER:

Project Name: *(as shown on Approval to Construct)*

Project Description:

(as shown on Approval to Construct, unless completed project differed, in which case describe in detail)

I, _____ *(print name)*, a Professional Engineer registered in the State of Arizona, have inspected the construction of the above described project, and certify that *(check all applicable boxes, complete applicable blanks)*:

ITEMS 1) THRU 4) MUST BE COMPLETED

☐ 1) The work on this project was completed on _____ *(date)*.

☐ 2) On _____ (date) a final construction inspection was conducted by ☐ MYSELF [-check one-] ☐ under MY DIRECT SUPERVISION by _____ *(print name)*.

☐ 3) The materials utilized and the installation and construction of those materials and equipment are in conformance with the approved plans and specifications

☐ 4) All provisions listed in the ADEQ Approval to Construct for this project, a copy of which I have attached to this certificate, have been fully satisfied or exceptions are listed on the reverse side of this certificate.

☐ 5) All construction and preoperational tests (infiltration, exfiltration, pressure, deflection, chlorination, bacti, etc.) *(circle types performed)* were properly conducted, met ADEQ requirements, and are presented in attachments to this Certificate. The total number of pages of test results attached is _____.

EITHER 5A) or 5B) MUST BE CHECKED

☐ 6A) Any deviation from the approved plans and the ADEQ Certificate of Approval to Construct have been noted on the attached "As-Built" plans (as stipulated in the Approval to Construct provisions) prepared and sealed pursuant to A.R.S.§ 32-125 on _____ *(date)*. Of the total _____ sheets of "As-Built" plans attached, deviations from the approved plans are shown on sheets numbered _____. All deviations from the approved plans comply with the ADEQ minimum design and construction standards contained in statute, rule, bulletin or referenced codes, and with the key elements of the approved plans.

☐ 6B) The completed project did not deviate from the plans which received the Approval to Construct.

EITHER 7A) or 7B) MUST BE CHECKED

☐ 7A) This project did not require the preparation of an Operation and Maintenance Manual
(the only projects which do NOT require an O&M manual are gravity-only sewage collection systems, single-family residence septic systems, and drinking water distribution projects that include no source, storage, or pressurization facilities).

☐ 7B) A FINAL Operation and Maintenance Manual has been prepared for this project and a copy is attached. This manual meets all ADEQ minimum design and construction standards contained in statute, rule, bulletin, referenced codes, the key elements of the approved plans, and, if applicable, with Attachment B of the September 10, 1994 Engineering Advisory for Individual Alternate Systems.

EITHER 8A) or 8B) MUST BE CHECKED

☐ 8A) Review of this project for Approval of Construction issuance does not require a fee because this project involves only drinking water, not wastewater.

☐ 8B) In accordance with A.A.C. R18-14-103 Schedule B, a check in the amount of $ _____ is attached as initial fee for review of the submitted and other information for issuance of an Approval of Construction.

ADDITIONAL INFORMATION

☐ 9) Other, see additional information on reverse side.

ENGINEER'S SEAL per AAC R4-30-304.B)

Engineer Address _____

Phone _____

[redacted]

Janet Napolitano
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.adeq.state.az.us

Stephen A. Owens
Director

DATA REQUIRED WITH ECC

THE FOLLOWING RECORD REQUIREMENTS ARE ATTACHED:

1.0 CONSTRUCTION DRAWINGS WITH "AS-BUILT" LOCATION OF PIPE, FITTINGS, ETC. MARKING IN RED PREPARED BY_____

2.0 PRESSURE AND LEAKAGE TEST RESULTS					
2.1 DATE TESTED					
2.2 TIME STARTED					
2.3 TIME FINISHED					
2.4 PIPE DIAMETER					
2.5 FOOTAGE TESTED					
2.6 ALLOWABLE LEAKAGE					
2.7 LEAKAGE OBSERVED					
2.8 PRESSURE AT TEST POINT					
2.9 EMPLOYEE OBSERVING TEST (print)					
2.10 INITIALS OF EMPLOYEE					
3.0 DISINFECTION SAMPLING:					
3.1 INITIAL SAMPLING (Minimum 50 ppm available chlorine)	DATE				
	TIME				
	PPM Cl_2				
3.2 AFTER 24 HOURS DETENTION TIME (Minimum 10 ppm free chlorine)	DATE				
	TIME				
	PPM Cl_2				
3.3 AFTER SUFFICIENT FLUSHING (Water is clear and system Cl_2 residual is measured)	DATE				
	TIME				
	PPM Cl_2				
4.0 BACTERIOLOGICAL SAMPLING (S):	DATE				
	TIME				
	ATTACHED	Yes/No	Yes/No	Yes/No	Yes/No

I certify that I have inspected the work done and have found it to be satisfactory and in accordance with approved specifications.

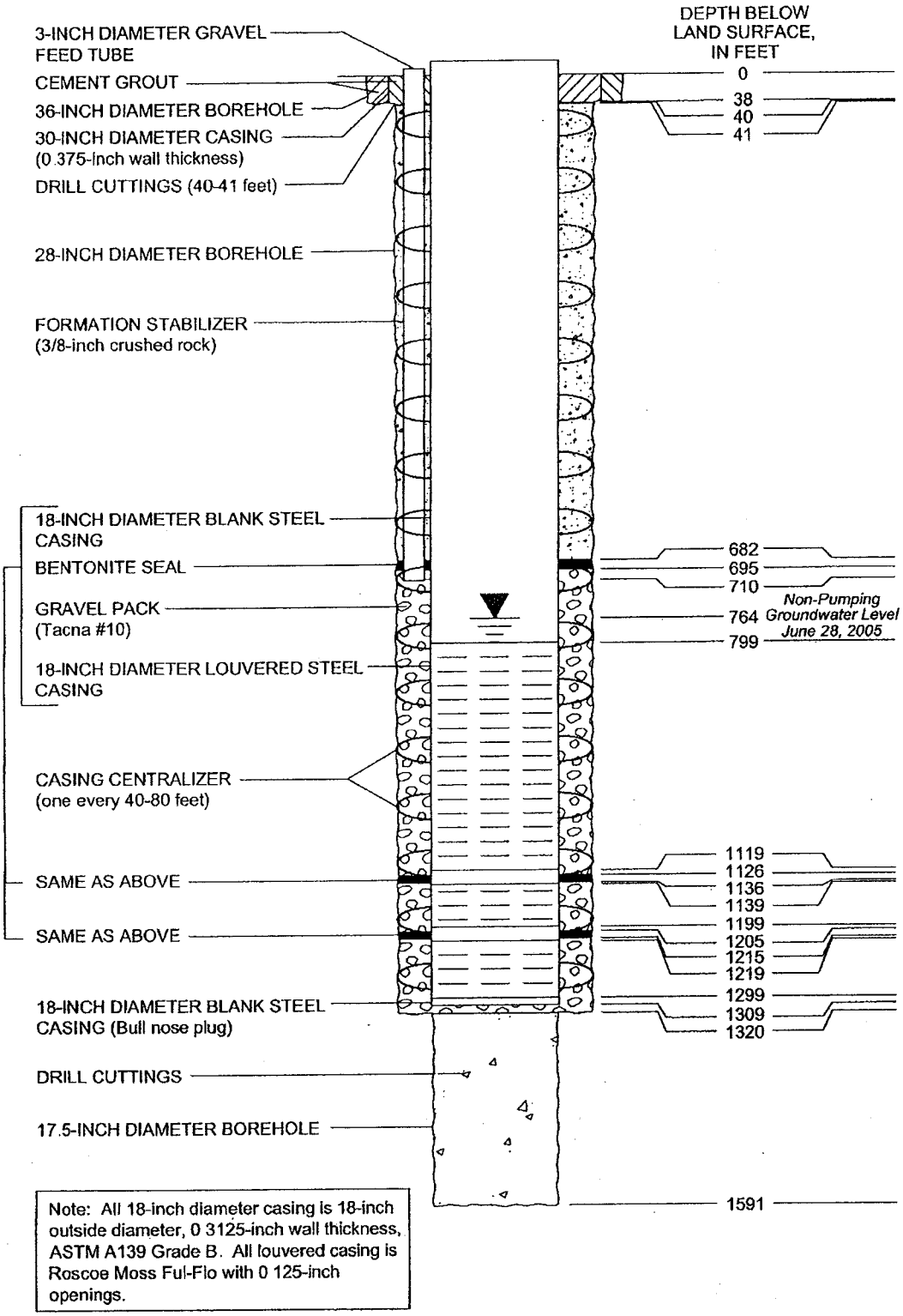
_____ Authorized Person's Signature

_____ Date

Printed on recycled paper

Northern Regional Office
1515 East Cedar Avenue • Suite F • Flagstaff, AZ 86004
(928) 779-0313

Southern Regional Office
400 West Congress Street • Suite 433 • Tucson, AZ 85701
(520) 628-6733



Note: All 18-inch diameter casing is 18-inch outside diameter, 0.3125-inch wall thickness, ASTM A139 Grade B. All louvered casing is Roscoe Moss Ful-Flo with 0.125-inch openings.

FIGURE 1. SCHEMATIC DIAGRAM OF CONSTRUCTION FOR GOLDEN VALLEY WELL GV-1 (B-21-18)34dab (#55-901789)

Inorganic Chemical Analysis

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont Code	Analysis Run Date	Result	Exceeds MCL	Exceeds Reporting Limit
200.9	0 05	0 05	Arsenic	1005	6/14/2005	0.0078	□	□
200.7	2	2	Barium	1010	6/14/2005	0.032	□	□
200.7	0.005	0 005	Cadmium	1015	6/14/2005	<0.0030	□	□
200.7	0.1	0 1	Chromium	1020	6/14/2005	<0.010	□	□
200.7	1.3*	0.050	Copper	1022	6/14/2005	<0.010	□	□
E300	4 0	2.0	Fluoride	1025	6/13/2005	0.67	□	□
200.9	0 015*	0 0025	Lead	1030	6/16/2005	<0.0030	□	□
245.1	0.002	0.002	Mercury	1035	6/16/2005	<0.0002	□	□
E353.2	10	5	Nitrate (as N)	1040	6/21/2005	5.2	□	x
SM4500-	1	0 5	Nitrite	1041	6/12/2005 12:20	<0.02	□	□
200.9	0.05	0 05	Selenium	1045	6/22/2005	<0.0030	□	□
200.8	0 006	0.006	Antimony	1074	6/24/2005	<0.0030	□	□
200.7	0 004	0.004	Beryllium	1075	6/14/2005	<0.0010	□	□
SM4500G	0.2	0.2	Cyanide (as free	1024	6/21/2005	<0.010	□	□
200.7	0 1	0 1	Nickel	1036	6/14/2005	<0.010	□	□
200.9	0 002	0.002	Thallium	1085	6/13/2005	<0.0020	□	□

*Action Level

Laboratory Information

Specimen Number: 0506283-01 Sample Date: 06/11/05 Sample Time: 06:00
Lab ID Number: AZ0133 Name: Transwest Geochem
Comments: Antimony analyzed at Aerotech Environmental

Authorized Signature: Carlos D. McCutchen

Physical Analysis

Analysis Method	Contaminant Name	Cont. Code	Analysis Run Date	Result
E300	Sulfate	1055	6/13/2005	23
200.7	Sodium	1052	6/15/2005	52
	PH	1925		
SM2320B	Alkalinity	1927	6/23/2005	170
200.7	Hardness/Calcium	1918	6/14/2005	70
CALC	Langelier Index	1997	6/29/2005	0.032
	Temperature (°C)	1996		
SM2540C	Total Dissolved Solids-TDS	1930	6/15/2005	370

Laboratory Information

Specimen Number: 0506283-01 Sample Date:06/11/2005 Sample Time:06:00
Lab ID Number: AZ0133 Name: Transwest Geochem
Comments:
Authorized Signature: Carlos D. McCutchen

Synthetic Organic Chemical Analysis

Analysis	MCL	Reporting	Contaminant	Cont	Analysis	Result	Exceeds	Exceeds
515.3	0.07	0.0001	2,4-D	2105	6/20/2005	<0.0001	☐	☐
515.3	0.05	0.0002	2,4,5-TP (Silvex)	2110	6/20/2005	<0.0002	☐	☐
525.2	0.002	0.0002	Alachlor	2051	6/17/2005	<0.0002	☐	☐
505	0.003	0.001	Toxaphene	2020	6/17/2005	<0.001	☐	☐
525.2	0.003	0.0001	Atrazine	2050	6/17/2005	<0.0001	☐	☐
531.1	0.04	0.0009	Carbofuran	2046	6/15/2005	<0.0009	☐	☐
515.3	0.001	0.00004	Pentachlorophenol	2326	6/20/2005	<0.00004	☐	☐
505	0.002	0.0002	Chlorodane	2959	6/17/2005	<0.0002	☐	☐
504.1	0.0002	0.00002	Dibromochloropropane(DBCP)	2931	6/16/2005	<0.00002	☐	☐
504.1	0.00005	0.00001	Ethylene Dibromide (EDB)	2946	6/16/2005	<0.00001	☐	☐
525.2	0.0004	0.00004	Heptachlor	2065	6/17/2005	<0.00004	☐	☐
525.2	0.0002	0.00002	Heptachlor Epoxide	2067	6/17/2005	<0.00002	☐	☐
525.2	0.0002	0.00002	Lindane	2010	6/17/2005	<0.00002	☐	☐
525.2	0.04	0.0001	Methoxychlor	2015	6/17/2005	<0.0001	☐	☐
	0.0005	0.0001	PCB (Polychlorinated Biohenyls)	2383			☐	☐
525.2	0.0002	0.00002	Benzo(a)Pyrene	2306	6/17/2005	<0.00002	☐	☐
515.3	0.2	0.001	Dalapon	2031	6/20/2005	<0.001	☐	☐
525.2	0.006	0.0006	Di(2-ethylhexyl)phthalate	2039	6/17/2005	<0.0006	☐	☐
525.2	0.4	0.0006	Di(2-ethylhexyl)adipate	2035	6/17/2005	<0.0006	☐	☐
515.3	0.007	0.0002	Dinoseb	2041	6/20/2005	<0.0002	☐	☐
1613B	$3x10^{-8}$	$5x10^{-9}$	2,3,7,8-TCDD (Dioxin)	2063			☐	☐
549.2	0.02	0.0004	Diquat	2032	6/16/2005	<0.0004	☐	☐
548.1	0.1	0.0009	Endothall	2033	6/17/2005	<0.009	☐	☐
525.2	0.002	0.00001	Endrin	2005	6/17/2005	<0.00001	☐	☐
547	0.7	0.006	Glyphosate	2034			☐	☐
525.2	0.001	0.0001	Hexachlorobenzene	2274	6/17/2005	<0.0001	☐	☐
525.2	0.05	0.0001	Hexachlorocyclopentadiene	2042	6/17/2005	<0.0001	☐	☐
531.1	0.2	0.002	Oxamyl	2036	6/15/2005	<0.002	☐	☐
515.3	0.5	0.0001	Picloram	2040	6/20/2005	<0.0001	☐	☐
525.2	0.004	0.0007	Simazine	2037	6/17/2005	<0.00007	☐	☐

*Aroclor results may be submitted in lieu of PCB

Laboratory Information

Specimen Number: 0506283-01 Sample Date: 06/11/2005 Sample Time 06:00

Lab ID Number: AZ0432 Name: Environmental Health Laboratories

Comments:

Authorized Signature: Carlene MacCutcheon

Aroclor (PCB Screening Test)

Analysis	Reporting	Contaminant	Cont.	Analysis	Result	Exceeds
505	0.00008	Aroclor 1016	2388	6/17/2005	<0.00008	☐
505	0.02	Aroclor 1221	2390	6/17/2005	<0.02	☐
505	0 0005	Aroclor 1232	2392	6/17/2005	<0.0005	☐
505	0 0003	Aroclor 1242	2394	6/17/2005	<0.0003	☐
505	0 0001	Aroclor 1248	2396	6/17/2005	<0.0001	☐
505	0 0001	Aroclor 1254	2398	6/17/2005	<0.0001	☐
505	0 0002	Aroclor 1260	2400	6/17/2005	<0.0002	☐

Laboratory Information

Specimen Number: 0506283-01 Sample Date: 06/11/2005 Sample Time: 06:00
Lab ID Number: AZ0432 Name: Environmental Health Laboratories
Comments:
Authorized Signature: Carlene MacCutchen

Volatile Organic Chemical Analysis

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont Code	Analysis Run Date	Result	Exceeds MCL	Exceeds Reporting Limit
E524.2	0.007	0.0005	1,1Dichloroethlene	2977	6/15/2005	<0.0005	☐	☐
E524.2	0.2	0 0005	1,1,1-Trichlorethane	2981	6/15/2005	<0.0005	☐	☐
E524.2	0.005	0 0005	1,1,2-Trichloroethane	2985	6/15/2005	<0.0005	☐	☐
E524.2	0 005	0.0005	1,2-Dichloroethane	2980	6/15/2005	<0.0005	☐	☐
E524.2	0.005	0.0005	1,2-Dichloropropane	2983	6/15/2005	<0.0005	☐	☐
E524.2	0.005	0 0005	Benzene	2990	6/15/2005	<0.0005	☐	☐
E524.2	0.005	0.0005	Carbon Tetrachloride	2982	6/15/2005	<0.0005	☐	☐
E524.2	0.07	0.0005	cis-1,2 Dichloroethylene	2380	6/15/2005	<0.0005	☐	☐
E524.2	0.7	0 0005	Ethylbenzene	2992	6/15/2005	<0.0005	☐	☐
E524.2	0 1	0 0005	(mono) Chlorobenzene	2989	6/15/2005	<0.0005	☐	☐
E524.2	0.6	0.0005	o-Dichlorobenzene	2968	6/15/2005	<0.0005	☐	☐
E524.2	0.075	0 0005	para-Dichlorobenzene	2969	6/15/2005	<0.0005	☐	☐
E524.2	0.1	0 0005	Styrene	2996	6/15/2005	<0.0005	☐	☐
E524.2	0 005	0.0005	Tetrachloroethylene	2987	6/15/2005	<0.0005	☐	☐
E524.2	1	0.0005	Toluene	2991	6/15/2005	<0.0005	☐	☐
E524.2	0.1	0 0005	Trans-1,2-Dichloroethylene	2979	6/15/2005	<0.0005	☐	☐
E524.2	0.005	0 0005	Trichloroethlene	2984	6/15/2005	<0.0005	☐	☐
E524.2	0 002	0.0005	Vinyl Chloride	2976	6/15/2005	<0.0005	☐	☐
E524.2	10	0.0015	Xylenes, Total	2955	6/15/2005	<0.0015	☐	☐
E524.2	0.07	0.0005	1,2,4-Trichlorobenzene	2378	6/15/2005	<0.0005	☐	☐
E524.2	0.005	0.0005	Dichloromethane	2964	6/15/2005	<0.0005	☐	☐

Laboratory Information

Specimen Number: 0506283-01 Sample Date: 06/11/2005 Sample Time: 06:00
Lab ID Number: AZ0133 Name: Transwest Geochem
Comments:
Authorized Signature: Carlene MacCutchen

Radiochemical Analysis

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analysis Run Date	Result	Exceeds MCL	Exceeds Reporting Limit
	15 pCi L		Adjusted Gross Alpha	4000			☐	
600/00-02		3 pCi/L	Gross Alpha	4002	6/15/2005	4.3+/-1.0		☐
	30ppb	(reserved)	Combined Uranium	4006			☐	☐
			Uranium 234	4007				
			Uranium 235	4008				
			Uranium 238	4009				
	5 pCi/L	1 pCi/L	Combined Radium	4010			☐	☐
		1 pCi/L	Radium 226	4020				☐
		1 pCi/L	Radium 228	4030				
	4 mrem	3 pCi/L	Gross Beta	4100			☐	☐
	20,000 pCi/L	1,000 pCi/L	Tritium	4102			☐	☐
		10 pCi/L	Strontium-89	4172				☐
	8 pCi/L	2 pCi/L	Strontium-90	4174			☐	☐
		1 pCi/L	Iodine-131	4264				☐
		10 pCi/L	Cesium-134_	4270				☐

Laboratory Information

Specimen Number:_0506283-01__Sample Date: 06/11/2005 Sample Time:06:00
Lab ID Number:_AZ0462_____Name:Radiation Safety Engineering_____
Comments:_____
Authorized Signature: Carlene MacCutchen
Date Public Water System Notified:_____

Asbestos Analysis

Analysis Method	MCL	Contaminant Name	Cont. Code	Analysis Run Date	Result	Exceeds MCL
E100.1	7 MFL	Asbestos	1094	6/17/2005	<1.0	☐

Laboratory Information

Specimen Number_0506283-01____Sample Date: 06/11/2005 Sample Time: 06:00
Lab ID Number_AZ0633____ Name_Fiberquant Analytical Services_____
Comments:_____
Authorized Signature: Carlene MacCutchen
Date Public Water System Notified:_____

MICROBIOLOGICAL ANALYSIS

Analysis Method	MCL	Contaminant Name	Cont Code	Test Start Date/Time	Analysis Run Date/Time	Result
9223B	Present 1 or More Coliform	Total Coliform	3000	6/11/2005 12:50	6/12/2005 12:50	0

ONLY REPORT FECAL RESULT IF TOTAL COLIFORM RESULT IS POSITIVE

Analysis Method	MCL	Contaminant Name	Cont Code	Test Start Date/Time	Analysis Run Date/Time	Result
	Present 1 or More Coliform	Total Coliform	3013			

LABORATORY INFORMATION

>>>To be filled out by laboratory personnel<<<

Specimen Number__0506283-01___Sample Date:06/11/2005 Sample Time: 06:00
Lab ID Number_AZ0610 Name_Aerotech Environmental Laboratories_____
Comments:_____
Authorized Signature:_____Carlene McCutchen_____
Date Public Water System Notified:_____
Dwar9: Revised 2003

INSTRUCTIONS FOR USING THE ARIZONA DRINKING WATER SOURCE APPROVAL REPORTING FORM

Revised 2003

SYSTEM ID: This is a unique 5 digit Public Water System Identification (PWSID) number assigned to each public water system by ADEQ

SYSTEM NAME: Should be in the legal name which the water system will be known as when the system is built Always notify the Department in writing of any name or ownership change

ADEQ PROJECT NUMBER: This is the number assigned by ADEQ when the project is first submitted for an "Approval to Construct".

NEW SYSTEM: If this is a new system and a system in number has not yet been assigned by ADEQ, then mark "YES", and be sure that the project number is filled in

NEW POE: If this source represents a new point of entry (POE) for your system, then mark "YES" on the form. This will allow ADEQ to assign a new point of entry number and the appropriate monitoring year for this point of entry.

WELL ID NUMBER: The Department of Water Resources' registration number goes here. This number always begins with a 55- If the new source does not constitute a new point of entry, fill in the existing point of entry number that this source is joining.

SURFACE WATER INTAKE ID NUMBER: This number must be assigned by ADEQ. If the new source does not constitute a new point of entry, fill in the existing point of entry number that this source is joining.

SAMPLE DATE: The date the specimen was collected in mm/dd/yy format.

SAMPLE TIME: The time the specimen was collected in hh:mm format (24 hr clock time)

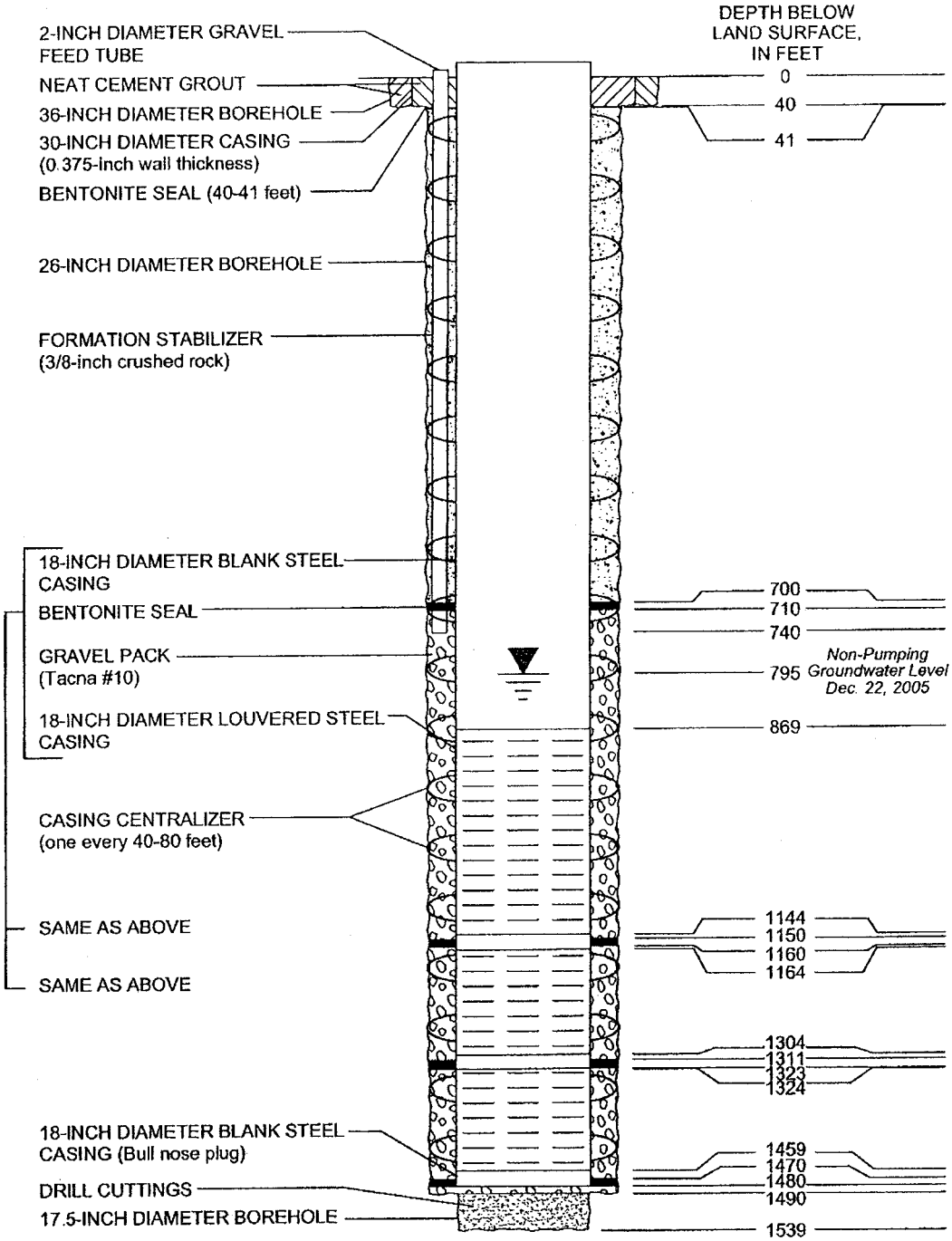
OWNER/CONTACT PERSON NAME: The first and last name of the owner or owner's representative, (contact person) who should be contacted with sample results

OWNER/CONTACT PHONE#: The daytime phone number of the owner's representative, (contact person) who should be contacted with sample results.

SAMPLE TYPE: The compliance reason for specimen collection Only the relevant sample types for each contaminant group are provided on the ADEQ forms

SPECIMEN NUMBER: A unique 15 character (max) alphanumeric code that identifies a particular sample used to test one contaminant or one category of contaminants. If reporting on different reporting forms, a different (unique) number is required for each contaminant group and for each report.

NOTE: These definitions are general in nature. For specific questions regarding your laboratory submittal, please contact the Arizona Department of Environmental Quality (ADEQ) **Water Quality Compliance Section at 1-800-234-5677, ext. 4624, or 602-771-4624.** **www.adeq.state.az.us**



Note: All 18-inch diameter casing is 18-inch outside diameter, 0.312-inch wall thickness, ASTM A139 Grade B. All louvered casing is Roscoe Moss Ful-Flo with 0.125-inch openings.

FIGURE 1. SCHEMATIC DIAGRAM OF CONSTRUCTION FOR GOLDEN VALLEY WELL GV-2 (B-21-18)27baa (#55-902965)

Inorganic Chemical Analysis

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont Code	Analysis Run Date	Result	Exceeds MCL	Exceeds Reporting Limit
200.9	0.05	0 05	Arsenic	1005	11/10/2005	0.0072	☐	☐
200.7	2	2	Barium	1010	11/10/2005	0.060	☐	☐
200.7	0 005	0 005	Cadmium	1015	11/10/2005	<0.0030	☐	☐
200.7	0 1	0 1	Chromium	1020	11/10/2005	<0.010	☐	☐
200.7	1 3*	0 050	Copper	1022	11/17/2005	<0.010	☐	☐
E300	4 0	2 0	Fluoride	1025	11/15/2005	4.6	X	X
200.9	0 015*	0 0025	Lead	1030	11/14/2005	<0.0030	☐	☐
245.1	0 002	0.002	Mercury	1035	11/10/2005	<0.0002	☐	☐
E353.2	10	5	Nitrate (as N)	1040	11/14/2005	1.3	☐	☐
SM4500-NNO2	1	0 5	Nitrite	1041	11/4/2005 15:17	<0.020	☐	☐
200.9	0.05	0.05	Selenium	1045	11/7/2005	0.0037	☐	☐
200.9	0 006	0.006	Antimony	1074	11/11/2005	<0.0030	☐	☐
200.7	0.004	0.004	Beryllium	1075	11/21/2005	<0.0010	☐	☐
SM4500G	0 2	0 2	Cyanide (as free	1024	11/10/2005	<0.010	☐	☐
200.7	0.1	0.1	Nickel	1036	11/17/2005	<0.010	☐	☐
200.9	0 002	0 002	Thallium	1085	11/16/2005	<0.0020	☐	☐

*Action Level

Laboratory Information

Specimen Number:_ 0511142-01 ___Sample Date: 11/04/2005 Sample Time: 11:55

Lab ID Number:_AZ0133_Name:_Transwest Geochem_____

Comments:_____

Authorized Signature: Carlene McCutchen

Physical Analysis

Analysis Method	Contaminant Name	Cont. Code	Analysis Run Date	Result
E300	Sulfate	1055	11/15/2005	85
200.7	Sodium	1052	11/16/2005	120
	PH	1925		
SM2320B	Alkalinity	1927	11/8/2005	79
200.7	Hardness/Calcium	1918	11/10/2005	72
CALC	Langelier Index	1997	11/14/2005	-0.073
	Temperature (°C)	1996		
SM2540C	Total Dissolved Solids-TDS	1930	11/7/2005	440

Laboratory Information

Specimen Number:_0511142-01_____Sample Date:11/04/2005 Sample Time:11:55

Lab ID Number:_AZ0133_____Name: Transwest Geochem_____

Comments:_____

Authorized Signature: Carlene McCutchen

Synthetic Organic Chemical Analysis

Analysis	MCL	Reporting	Contaminant	Cont.	Analysis	Result	Exceeds	Exceeds
515.3	0 07	0.0001	2,4-D	2105	11/17/2005	<0.0001	☐	☐
515.3	0.05	0.0002	2,4,5-TP (Silvex)	2110	11/17/2005	<0.0002	☐	☐
525.2	0 002	0.0002	Alachlor	2051	11/11/2005	<0.0002	☐	☐
505	0.003	0 001	Toxaphene	2020	11/11/2005	<0.001	☐	☐
525.2	0.003	0.0001	Atrazine	2050	11/11/2005	<0.0001	☐	☐
531.1	0.04	0 0009	Carbofuran	2046	11/14/2005	<0.0009	☐	☐
515.3	0 001	0.00004	Pentachlorophenol	2326	11/17/2005	<0.00004	☐	☐
505	0.002	0 0002	Chlorodane	2959	11/11/2005	<0.0002	☐	☐
504.1	0.0002	0 00002	Dibromochloropropane(DBCP)	2931	11/11/2005	<0.00002	☐	☐
504.1	0 00005	0.00001	Ethylene Dibromide (EDB)	2946	11/11/2005	<0.00001	☐	☐
525.2	0.0004	0 00004	Heptachlor	2065	11/11/2005	<0.00004	☐	☐
525.2	0.0002	0 00002	Heptachlor Epoxide	2067	11/11/2005	<0.00002	☐	☐
525.2	0.0002	0 00002	Lindane	2010	11/11/2005	<0.00002	☐	☐
525.2	0 04	0 0001	Methoxychlor	2015	11/11/2005	<0.0001	☐	☐
	0 0005	0.0001	PCB (Polychlorinated Biohenyls)	2383			☐	☐
525.2	0.0002	0.00002	Benzo(a)Pyrene	2306	11/11/2005	<0.00002	☐	☐
515.3	0 2	0.001	Dalapon	2031	11/17/2005	<0.001	☐	☐
525.2	0.006	0.0006	Di(2-ethylhexyl)phthalate	2039	11/11/2005	<0.0006	☐	☐
525.2	0 4	0.0006	Di(2-ethylhexyl)adipate	2035	11/11/2005	<0.0006	☐	☐
515.3	0 007	0.0002	Dinoseb	2041	11/17/2005	<0.0002	☐	☐
1613B	$3x10^{-8}$	$5x10^{-9}$	2,3,7,8-TCDD (Dioxin)	2063	12/16/2005	<1.3X10-9	☐	☐
549.2	0.02	0.0004	Diquat	2032	11/11/2005	<0.0004	☐	☐
548.1	0.1	0 0009	Endothall	2033	11/11/2005	<0.009	☐	☐
525.2	0 002	0.00001	Endrin	2005	11/11/2005	<0.00001	☐	☐
547	0.7	0.006	Glyphosate	2034	11/12/2005	<0.006	☐	☐
525.2	0 001	0.0001	Hexachlorobenzene	2274	11/11/2005	<0.0001	☐	☐
525.2	0 05	0.0001	Hexachlorocyclopentadiene	2042	11/11/2005	<0.0001	☐	☐
531.1	0 2	0.002	Oxamyl	2036	11/14/2005	<0.002	☐	☐
515.3	0 5	0 0001	Picloram	2040	11/17/2005	<0.0001	☐	☐
525.2	0 004	0.0007	Simazine	2037	11/11/2005	<0.00007	☐	☐

*Aroclor results may be submitted in lieu of PCB

Laboratory Information

Specimen Number: 0511142-01 Sample Date: 11/04/2005 Sample Time 11:55

Lab ID Number: AZ0432 /AZ0423 Name: Environmental Health Laboratories /Eno River Labs

Comments:

Authorized Signature: Carlene McCutchen

Aroclor (PCB Screening Test)

Analysis	Reporting	Contaminant	Cont.	Analysis	Result	Exceeds
505	0.00008	Aroclor 1016	2388	11/11/2005	<0.00008	☐
505	0.02	Aroclor 1221	2390	11/11/2005	<0.02	☐
505	0.0005	Aroclor 1232	2392	11/11/2005	<0.0005	☐
505	0.0003	Aroclor 1242	2394	11/11/2005	<0.0003	☐
505	0.0001	Aroclor 1248	2396	11/11/2005	<0.0001	☐
505	0.0001	Aroclor 1254	2398	11/11/2005	<0.0001	☐
505	0.0002	Aroclor 1260	2400	11/11/2005	<0.0002	☐

Laboratory Information

Specimen Number 0511142-01 Sample Date: 11/04/2005 Sample Time: 11:55
Lab ID Number: AZ0432 Name: Environmental Health Laboratories
Comments:
Authorized Signature: Carlene McCutchen

Volatile Organic Chemical Analysis

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont Code	Analysis Run Date	Result	Exceeds MCL	Exceeds Reporting Limit
E524.2	0.007	0.0005	1,1Dichloroethlene	2977	11/16/2005	<0.0005	☐	☐
E524.2	0.2	0.0005	1,1,1-Trichlorethane	2981	11/16/2005	<0.0005	☐	☐
E524.2	0.005	0.0005	1,1,2-Trichloroethane	2985	11/16/2005	<0.0005	☐	☐
E524.2	0.005	0.0005	1,2-Dichloroethane	2980	11/16/2005	<0.0005	☐	☐
E524.2	0.005	0.0005	1,2-Dichloropropane	2983	11/16/2005	<0.0005	☐	☐
E524.2	0.005	0.0005	Benzene	2990	11/16/2005	<0.0005	☐	☐
E524.2	0.005	0.0005	Carbon Tetrachloride	2982	11/16/2005	<0.0005	☐	☐
E524.2	0.07	0.0005	cis-1,2 Dichloroethylene	2380	11/16/2005	<0.0005	☐	☐
E524.2	0.7	0.0005	Ethylbenzene	2992	11/16/2005	<0.0005	☐	☐
E524.2	0.1	0.0005	(mono) Chlorobenzene	2989	11/16/2005	<0.0005	☐	☐
E524.2	0.6	0.0005	o-Dichlorobenzene	2968	11/16/2005	<0.0005	☐	☐
E524.2	0.075	0.0005	para-Dichlorobenzene	2969	11/16/2005	<0.0005	☐	☐
E524.2	0.1	0.0005	Styrene	2996	11/16/2005	<0.0005	☐	☐
E524.2	0.005	0.0005	Tetrachloroethylene	2987	11/16/2005	<0.0005	☐	☐
E524.2	1	0.0005	Toluene	2991	11/16/2005	<0.0005	☐	☐
E524.2	0.1	0.0005	Trans-1,2-Dichloroethylene	2979	11/16/2005	<0.0005	☐	☐
E524.2	0.005	0.0005	Trichloroethlene	2984	11/16/2005	<0.0005	☐	☐
E524.2	0.002	0.0005	Vinyl Chloride	2976	11/16/2005	<0.0005	☐	☐
E524.2	10	0.0015	Xylenes, Total	2955	11/16/2005	<0.0015	☐	☐
E524.2	0.07	0.0005	1,2,4-Trichlorobenzene	2378	11/16/2005	<0.0005	☐	☐
E524.2	0.005	0.0005	Dichloromethane	2964	11/16/2005	<0.0005	☐	☐

Laboratory Information

Specimen Number: 0511142-01 Sample Date: 11/04/2005 Sample Time: 11:55

Lab ID Number: AZ0133 Name: Transwest Geochem
Comments:
Authorized Signature: Carlene McCutchen

MCL	Reporting Limit	Contaminant Name	Cont Code	Analysis Run Date	Result	Exceeds MCL	Exceeds Reporting Limit
15 pCi/L		Adjusted Gross Alpha	4000			☐	
	3 pCi/L	Gross Alpha	4002	11/9/2005	3.9+/-0.9		☐
30ppb	(reserved)	Combined Uranium	4006			☐	☐
		Uranium 234	4007				
		Uranium 235	4008				
		Uranium 238	4009				
5 pCi/L	1 pCi/L	Combined Radium	4010			☐	☐
	1 pCi/L	Radium 226	4020				☐
	1 pCi/L	Radium 228	4030				
4 mrem	3 pCi/L	Gross Beta	4100			☐	☐
20,000 pCi/L	1,000 pCi/L	Tritium	4102			☐	☐
	10 pCi/L	Strontium-89	4172				☐
8 pCi/L	2 pCi/L	Strontium-90	4174			☐	☐
	1 pCi/L	Iodine-131	4264				☐
	10 pCi/L	Cesium-134	4270				☐

*****Radiochemical Analysis*****

Laboratory Information

Specimen Number:0511142-01 Sample Date: 11/04/2005 Sample Time:11:55
Lab ID Number: AZ0462 Name:Radiation Safety Engineering
Comments:
Authorized Signature: Carlene McCutchen
Date Public Water System Notified:

*****Asbestos Analysis*****

Analysis Method	MCL	Contaminant Name	Cont Code	Analysis Run Date	Result	Exceeds MCL
E100.1	7 MFL	Asbestos	1094	11/8/2005	<0.2	☐

Laboratory Information

Specimen Number_0511142-01 Sample Date: 11/04/2005 Sample Time: 11:55
Lab ID Number_AZ0633 Name_Fiberquant Analytical Services
Comments:
Authorized Signature: Carlene McCutchen
Date Public Water System Notified:

MICROBIOLOGICAL ANALYSIS

Analysis Method	MCL	Contaminant Name	Cont Code	Test Start Date/Time	Analysis Run Date/Time	Result
9223B	Present 1 or More Coliform	Total Coliform	3000	11/4/2005 16:30	11/5/2005 16:30	1

ONLY REPORT FECAL RESULT IF TOTAL COLIFORM RESULT IS POSITIVE

Analysis Method	MCL	Contaminant Name	Cont Code	Test Start Date/Time	Analysis Run Date/Time	Result
	Present 1 or More Coliform	Total Coliform	3013	11/4/2005 16:30	11/5/2005 16:30	0

LABORATORY INFORMATION
>>>To be filled out by laboratory personnel<<<

Specimen Number_0511142-01___Sample Date:11/04/2005 Sample Time: 11:55
Lab ID Number_AZ0003 Name_Aquatic Consulting _____
Comments:_____
Authorized Signature:_____ Carlene McCutchen
Date Public Water System Notified:_____
Dwar9: Revised 2003

INSTRUCTIONS FOR USING THE ARIZONA DRINKING WATER SOURCE APPROVAL REPORTING FORM

Revised 2003

SYSTEM ID: This is a unique 5 digit Public Water System Identification (PWSID) number assigned to each public water system by ADEQ

SYSTEM NAME: Should be in the legal name which the water system will be known as when the system is built Always notify the Department in writing of any name or ownership change

ADEQ PROJECT NUMBER: This is the number assigned by ADEQ when the project is first submitted for an "Approval to Construct".

NEW SYSTEM: If this is a new system and a system in number has not yet been assigned by ADEQ, then mark "YES", and be sure that the project number is filled in

NEW POE: If this source represents a new point of entry (POE) for your system, then mark "YES" on the form. This will allow ADEQ to assign a new point of entry number and the appropriate monitoring year for this point of entry

WELL ID NUMBER: The Department of Water Resources' registration number goes here This number always begins with a 55- If the new source does not constitute a new point of entry, fill in the existing point of entry number that this source is joining.

SURFACE WATER INTAKE ID NUMBER: This number must be assigned by ADEQ. If the new source does not constitute a new point of entry, fill in the existing point of entry number that this source is joining

SAMPLE DATE: The date the specimen was collected in mm/dd/yy format.

SAMPLE TIME: The time the specimen was collected in hh:mm format (24 hr clock time)

OWNER/CONTACT PERSON NAME: The first and last name of the owner or owner's representative, (contact person) who should be contacted with sample results.

OWNER/CONTACT PHONE#: The daytime phone number of the owner's representative, (contact person) who should be contacted with sample results

SAMPLE TYPE: The compliance reason for specimen collection Only the relevant sample types for each contaminant group are provided on the ADEQ forms

SPECIMEN NUMBER: A unique 15 character (max) alphanumeric code that identifies a particular sample used to test one contaminant or one category of contaminants If reporting on different reporting forms, a different (unique) number is required for each contaminant group and for each report

NOTE: These definitions are general in nature For specific questions regarding your laboratory submittal, please contact the Arizona Department of Environmental Quality (ADEQ) Water Quality Compliance Section at 1-800-234-5677, ext. 4624, or 602-771-4624. www.adeq.state.az.us

RHODES HOMES ARIZONA, LLC

FACSIMILE TRANSMITTAL SHEET

TO: Ray L. Jones	FROM: Kirk Brynjulson
COMPANY: ARICOR Water Solutions	DATE: June 27, 2005
FAX NUMBER: 623.582.5160	TOTAL NO. OF PAGES INCLUDING COVER: 9
PHONE NUMBER: 623.341.4771	RE: Operation & Maintenance Agreements

☒ URGENT ☐ FOR REVIEW ☐ PLEASE COMMENT ☐ PLEASE REPLY ☐ PLEASE RECYCLE

NOTES/COMMENTS:

Attached are the executed Operation and Maintenance Agreements for Perkins Mountain Water Company and for Perkins Mountain Utility Company as requested for filing of the CC&N.

Originals will follow by mail.

FAXED
6.27.05
1:41pm
9pp
TW

THIS MESSAGE IS INTENDED ONLY FOR THE USE OF THE INDIVIDUAL OR ENTITY TO WHICH IT IS ADDRESSED, AND MAY CONTAIN INFORMATION THAT IS PRIVILEGED, CONFIDENTIAL AND EXEMPT FROM DISCLOSURE UNDER APPLICABLE LAW. IF THE READER OF THIS MESSAGE IS NOT THE INTENDED RECIPIENT, OR THE EMPLOYEE OR AGENT RESPONSIBLE FOR DELIVERING THE MESSAGE TO THE INTENDED RECIPIENT, YOU ARE HEREBY NOTIFIED THAT ANY DISSEMINATION, DISTRIBUTION OR COPYING OF THIS COMMUNICATION IS STRICTLY PROHIBITED. IF YOU HAVE RECEIVED THIS COMMUNICATION IN ERROR, PLEASE NOTIFY US IMMEDIATELY BY TELEPHONE, AND RETURN THE ORIGINAL TO US BY MAIL WITHOUT MAKING A COPY. THANK YOU FOR YOUR COOPERATION.

2215 HUALAPAI MOUNTAIN ROAD, SUITE H, KINGMAN, AZ 86401
PHONE: (928) 718-2210 – FAX: (928) 718-1322

A-13
admitted

Agreement for Operation and Maintenance of Water System

This Agreement for Operations and Maintenance of Water System ("Agreement") is made this 24th day of June, 2005 between ARICOR WATER SOLUTIONS LC, an Arizona limited liability company ("Operator") and Perkins Mountain Water Company, a Nevada limited liability company ("Owner").

RECITALS

A. Owner intends to apply to the Arizona Corporation Commission ("ACC") for authorization to provide water utility service within portions of Mohave County, Arizona more specifically described on Exhibit A attached hereto (the "Water Service Area").

B. Upon obtaining appropriate authorization from the Arizona Corporation Commission, owner will construct the necessary facilities, including wells, tanks, pumps, pipeline and related appurtenances (the "Water System") and obtain the necessary permits to begin providing utility service in the Water Service Area.

C. Owner desires to obtain contract services for the operation and maintenance of the Water System.

D. Operator has the necessary experience and resources to operate and maintain the Water System.

AGREEMENT

For and in consideration of the following covenants and promises, and for other good and valuable consideration, the receipt and sufficiency is hereby acknowledged, the parties hereto agree as follows:

1. ACC Authorization. This Agreement will not become effective until the ACC has issued Owner a Certificate of Convenience and Necessity to provide water utility service in the Water Service Area.

2. Term of Agreement. The term of this Agreement will begin upon issuance of an order by the ACC granting a Certificate of Convenience and Necessity to provide water utility service in the Water Service Area. This Agreement may be terminated by either party upon 30 days notice to the other party.

3. Duties and Obligations of Owner. Owner shall obtain regulatory approvals and permits required to allow Owner to provide water utility service and to construct the Water System. Owner shall design and construct the Water System in accordance with all local, state and federal standards for water systems operating in Mohave County, Arizona and to meet the demands of the Water Service Area. Owner shall provide all management and administrative functions, including, but not limited to, negotiating and executing service agreements, making regulatory filings, providing capital, obtaining permits, issuing bills, and providing customer services.

4. Duties and Obligations of Operator. Operator shall operate, maintain and repair the Water System, and make necessary replacements of portions thereof within the Water Service Area in accordance with applicable laws and with customary and reasonable standards for the

operation of public water systems in Mohave County, Arizona. Operation of the Water System shall be under the supervision of operator with an appropriate level of certification required by the Arizona Department of Environmental Quality.

5. Water System Operation and Maintenance Fee. Owner shall pay Operator a monthly base fee equal to the greater of a)$500.00 or, b) $0.50 per connected water meter at month end. In addition, Owner shall reimburse Operator for all costs incurred, including direct overheads, for operation and maintenance of the water system plus a ten percent (10%) administration fee.

6. Invoicing and Payment. Operator shall invoice Owner monthly for fees and costs incurred in the previous month. Owner shall pay all invoices within ten (10) days of receipt. Unpaid invoices shall be subject to a 1.5% per month late payment penalty first due after any invoice is unpaid for fifteen (15) days.

7. Insurance. For the term of this Agreement, Operator shall purchase and maintain the following insurance.

7.1. Commercial General Liability Insurance. Commercial General Liability Insurance covering liability arising from premises, operations, independent contractors, products-completed operations, personal injury and advertising injury. Limits of liability must be not less than $1,000,000 for any occurrence.

7.2. Automobile Liability Insurance. Automobile Liability coverage insuring against bodily injury and property damage arising out of the operation, maintenance and use of automobiles. Minimum coverage will be not less than $1,000,000 combined single limit each accident.

IN WITNESS WHEREOF Owner and Operator have executed this Agreement as of the date first above written.

PERKINS MOUNTAIN WATER COMPANY

Kirk Brynjulson
President

ARICOR WATER SOLUTIONS LC

Ray Jones
Principal

Exhibit A
Water Service Area

GOLDEN VALLEY SOUTH
CC & N BOUNDARY

LEGAL DESCRIPTION

TOWNSHIP 20 NORTH, RANGE 18 WEST, G. & S.R.M., MOHAVE COUNTY, AZ;

SECTION 2, EXCEPT THE W2 NW4 NW4 NW4 NE4 NE4, & THE SE4 SE4;
SECTION 3;
SECTION 4;
SECTION 8, EXCEPT THE W2 NW4 NW4 NE4;
SECTION 9;
SECTION 10;
SECTION 11, EXCEPT THE S2 SE4 SE4 SE4;
SECTION 14, EXCEPT THE E2 NE4, THE NE4 SE4, THE E2 W2 SE4 SE4, & THE E2 SE4 SE4;
SECTION 16;

TOWNSHIP 21 NORTH, RANGE 18 WEST, G. & S.R.M., MOHAVE COUNTY, AZ;

SW4 SECTION 34.

Exhibit A
Water Service Area

THE VILLAGES AT WHITE HILLS
CC & N SEWER/WATER BOUNDARY

LEGAL DESCRIPTION

TOWNSHIP 27 NORTH, RANGE 20 WEST, G. & S.R.M., MOHAVE COUNTY, AZ;

SECTION 16, EXCEPT THE NW4 NE4, & THE E2 NE4;
W2 W2 SECTION 17;
SECTION 20;
SECTION 21, EXCEPT THE SW4, & THE S2 SW4 NW4;
SECTION 23, EXCEPT THAT PORTION WITHIN THE BOUNDARIES OF BONITA M.S. 1253A, AS SET FORTH IN SAID PATENT.
ALL OF SECTION 30 LYING SOUTHERLY OF THE CENTERLINE OF WHITE HILLS ROAD (O.R. 274/50-97), EXCEPT THE SW4, & THE SW4 SE4;

TOWNSHIP 27 NORTH, RANGE 21 WEST, G. & S.R.M., MOHAVE COUNTY, AZ;

A PORTION OF THE E2 SECTION 25 DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF THE SOUTHEAST QUARTER (SE ¼) OF SAID SECTION 25; THENCE SOUTH 00°28'58" WEST, ALONG THE EASTERLY LINE THEREOF, 2,643.95 FEET TO THE SOUTHEAST CORNER OF SAID SOUTHEAST QUARTER (SE ¼); THENCE NORTH 89°33'42" WEST, ALONG THE SOUTHERLY LINE THEREOF, 164.23 FEET TO THE POINT OF CURVE OF A NON TANGENT CURVE TO THE LEFT, OF WHICH THE RADIUS POINT LIES SOUTH 74°14'59" WEST, A RADIAL DISTANCE OF 5,821.58 FEET, SAID POINT BEING ON THE EASTERLY RIGHT-OF-WAY LINE OF U.S. HIGHWAY 95; THENCE NORTHERLY ALONG THE ARC, ALONG SAID EASTERLY RIGHT-OF-WAY LINE, THROUGH A CENTRAL ANGLE OF 07°34'58", 770.46 FEET; THENCE NORTH 23°19'59" WEST, CONTINUING ALONG SAID EASTERLY RIGHT-OF-WAY LINE, 2,685.36 FEET TO THE CENTERLINE WHITE HILLS ROAD (O.R. 274/50-97); THENCE NORTH 68°20'45" EAST, ALONG SAID CENTERLINE, 1,632.40 FEET TO THE EASTERLY LINE OF THE NORTHEAST QUARTER (NE ¼) OF SAID SECTION 25; THENCE SOUTH 00°28'34" WEST, ALONG SAID EASTERLY LINE, 1,151.09 FEET TO THE POINT OF BEGINNING.

RHODES HOMES ARIZONA, LLC

FACSIMILE TRANSMITTAL SHEET

TO: Ray L. Jones	FROM: Kirk Brynjulson
COMPANY: ARICOR Water Solutions	DATE: June 27, 2005
FAX NUMBER: 623.582.5160	TOTAL NO. OF PAGES INCLUDING COVER: 9
PHONE NUMBER: 623.341.4771	RE: Operation & maintenance Agreements

☒ URGENT ☐ FOR REVIEW ☐ PLEASE COMMENT ☐ PLEASE REPLY ☐ PLEASE RECYCLE

NOTES/COMMENTS:

Attached are the executed Operation and Maintenance Agreements for Perkins Mountain Water Company and for Perkins Mountain Utility Company as requested for filing of the CC&N.

Originals will follow by mail.

FAXED
6.27.05
1:41pm
9pp
TW

THIS MESSAGE IS INTENDED ONLY FOR THE USE OF THE INDIVIDUAL OR ENTITY TO WHICH IT IS ADDRESSED, AND MAY CONTAIN INFORMATION THAT IS PRIVILEGED, CONFIDENTIAL AND EXEMPT FROM DISCLOSURE UNDER APPLICABLE LAW. IF THE READER OF THIS MESSAGE IS NOT THE INTENDED RECIPIENT, OR THE EMPLOYEE OR AGENT RESPONSIBLE FOR DELIVERING THE MESSAGE TO THE INTENDED RECIPIENT, YOU ARE HEREBY NOTIFIED THAT ANY DISSEMINATION, DISTRIBUTION OR COPYING OF THIS COMMUNICATION IS STRICTLY PROHIBITED. IF YOU HAVE RECEIVED THIS COMMUNICATION IN ERROR, PLEASE NOTIFY US IMMEDIATELY BY TELEPHONE, AND RETURN THE ORIGINAL TO US BY MAIL WITHOUT MAKING A COPY. THANK YOU FOR YOUR COOPERATION.

2215 HUALAPAI MOUNTAIN ROAD, SUITE H, KINGMAN, AZ 86401
PHONE: (928) 718-2210 – FAX: (928) 718-1322

A-14
admitted

Agreement for Operation and Maintenance of Wastewater System

This Agreement for Operations and Maintenance of Wastewater System ("Agreement") is made this 24th day of June, 2005 between ARICOR WATER SOLUTIONS LC, an Arizona limited liability company ("Operator") and Perkins Mountain Utility Company, a Nevada limited liability company ("Owner").

RECITALS

A. Owner intends to apply to the Arizona Corporation Commission ("ACC") for authorization to provide wastewater utility service within portions of Mohave County, Arizona more specifically described on Exhibit A attached hereto (the "Wastewater Service Area").

B. Upon obtaining appropriate authorization from the Arizona Corporation Commission, owner will construct the necessary facilities, including wells, tanks, pumps, pipeline and related appurtenances (the "Wastewater System") and obtain the necessary permits to begin providing utility service in the Wastewater Service Area.

C. Owner desires to obtain contract services for the operation and maintenance of the Wastewater System.

D. Operator has the necessary experience and resources to operate and maintain the Wastewater System.

AGREEMENT

For and in consideration of the following covenants and promises, and for other good and valuable consideration, the receipt and sufficiency is hereby acknowledged, the parties hereto agree as follows:

1. ACC Authorization. This Agreement will not become effective until the ACC has issued Owner a Certificate of Convenience and Necessity to provide wastewater utility service in the Wastewater Service Area.

2. Term of Agreement. The term of this Agreement will begin upon issuance of an order by the ACC granting a Certificate of Convenience and Necessity to provide wastewater utility service in the Wastewater Service Area. This Agreement may be terminated by either party upon 30 days notice to the other party.

3. Duties and Obligations of Owner. Owner shall obtain regulatory approvals and permits required to allow Owner to provide wastewater utility service and to construct the Wastewater System. Owner shall design and construct the Wastewater System in accordance with all local, state and federal standards for wastewater systems operating in Mohave County, Arizona and to meet the demands of the Wastewater Service Area. Owner shall provide all management and administrative functions, including, but not limited to, negotiating and executing service agreements, making regulatory filings, providing capital, obtaining permits, issuing bills, and providing customer services.

4. Duties and Obligations of Operator. Operator shall operate, maintain and repair the Wastewater System, and make necessary replacements of portions thereof within the Wastewater

Service Area in accordance with applicable laws and with customary and reasonable standards for the operation of public wastewater systems in Mohave County, Arizona. Operation of the Wastewater System shall be under the supervision of operator with an appropriate level of certification required by the Arizona Department of Environmental Quality.

5. Wastewater System Operation and Maintenance Fee. Owner shall pay Operator a monthly base fee equal to the greater of a)$500.00 or, b) $0.50 per water meter connected to the Perkins Mountain Water Company water system at month end. In addition, Owner shall reimburse Operator for all costs incurred, including direct overheads, for operation and maintenance of the wastewater system plus a ten percent (10%) administration fee.

6. Invoicing and Payment. Operator shall invoice Owner monthly for fees and costs incurred in the previous month. Owner shall pay all invoices within ten (10) days of receipt. Unpaid invoices shall be subject to a 1.5% per month late payment penalty first due after any invoice is unpaid for fifteen (15) days.

7. Insurance. For the term of this Agreement, Operator shall purchase and maintain the following insurance.

7.1. Commercial General Liability Insurance. Commercial General Liability Insurance covering liability arising from premises, operations, independent contractors, products-completed operations, personal injury and advertising injury. Limits of liability must be not less than $1,000,000 for any occurrence.

7.2. Automobile Liability Insurance. Automobile Liability coverage insuring against bodily injury and property damage arising out of the operation, maintenance and use of automobiles. Minimum coverage will be not less than $1,000,000 combined single limit each accident.

IN WITNESS WHEREOF Owner and Operator have executed this Agreement as of the date first above written.

PERKINS MOUNTAIN UTILITY COMPANY	ARICOR WATER SOLUTIONS LC
Kirk Brynjulson President	Ray Jones Principal

Exhibit A
Water Service Area

GOLDEN VALLEY SOUTH
CC & N BOUNDARY

LEGAL DESCRIPTION

TOWNSHIP 20 NORTH, RANGE 18 WEST, G. & S.R.M., MOHAVE COUNTY, AZ:

SECTION 2, EXCEPT THE W2 NW4 NW4 NW4 NE4 NE4, & THE SE4 SE4;
SECTION 3;
SECTION 4;
SECTION 8, EXCEPT THE W2 NW4 NW4 NE4;
SECTION 9;
SECTION 10;
SECTION 11, EXCEPT THE S2 SE4 SE4 SE4;
SECTION 14, EXCEPT THE E2 NE4, THE NE4 SE4, THE E2 W2 SE4 SE4, & THE E2 SE4 SE4;
SECTION 16;

TOWNSHIP 21 NORTH, RANGE 18 WEST, G. & S.R.M., MOHAVE COUNTY, AZ:

SW4 SECTION 34.

Exhibit A
Water Service Area

THE VILLAGES AT WHITE HILLS
CC & N SEWER/WATER BOUNDARY

LEGAL DESCRIPTION

TOWNSHIP 27 NORTH, RANGE 20 WEST, G. & S.R.M., MOHAVE COUNTY, AZ;

SECTION 16, EXCEPT THE NW4 NE4, & THE E2 NE4;
W2 W2 SECTION 17;
SECTION 20;
SECTION 21, EXCEPT THE SW4, & THE S2 SW4 NW4;
SECTION 23, EXCEPT THAT PORTION WITHIN THE BOUNDARIES OF BONITA M.S. 1253A, AS SET FORTH IN SAID PATENT.
ALL OF SECTION 30 LYING SOUTHERLY OF THE CENTERLINE OF WHITE HILLS ROAD (O.R. 274/50-97), EXCEPT THE SW4, & THE SW4 SE4;

TOWNSHIP 27 NORTH, RANGE 21 WEST, G. & S.R.M., MOHAVE COUNTY, AZ;

A PORTION OF THE E2 SECTION 25 DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF THE SOUTHEAST QUARTER (SE ¼) OF SAID SECTION 25; THENCE SOUTH 00°28'58" WEST, ALONG THE EASTERLY LINE THEREOF, 2,643.95 FEET TO THE SOUTHEAST CORNER OF SAID SOUTHEAST QUARTER (SE ¼); THENCE NORTH 89°33'42" WEST, ALONG THE SOUTHERLY LINE THEREOF, 164.23 FEET TO THE POINT OF CURVE OF A NON TANGENT CURVE TO THE LEFT, OF WHICH THE RADIUS POINT LIES SOUTH 74°14'59" WEST, A RADIAL DISTANCE OF 5,821.58 FEET, SAID POINT BEING ON THE EASTERLY RIGHT-OF-WAY LINE OF U.S. HIGHWAY 95; THENCE NORTHERLY ALONG THE ARC, ALONG SAID EASTERLY RIGHT-OF-WAY LINE, THROUGH A CENTRAL ANGLE OF 07°34'58", 770.46 FEET; THENCE NORTH 23°19'59" WEST, CONTINUING ALONG SAID EASTERLY RIGHT-OF-WAY LINE, 2,685.36 FEET TO THE CENTERLINE WHITE HILLS ROAD (O.R. 274/50-97); THENCE NORTH 68°20'45" EAST, ALONG SAID CENTERLINE, 1,632.40 FEET TO THE EASTERLY LINE OF THE NORTHEAST QUARTER (NE ¼) OF SAID SECTION 25; THENCE SOUTH 00°28'34" WEST, ALONG SAID EASTERLY LINE, 1,151.09 FEET TO THE POINT OF BEGINNING.

ARIZONA DEPARTMENT OF WATER RESOURCES
Office of Assured and Adequate Water Supply
500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2465
Fax (602) 417-2467

Janet Napolitano
Governor

Herbert R. Guenther
Director

ANALYSIS OF ADEQUATE WATER SUPPLY

October 19, 2005

File Number:	23-401823.0000
Development:	Golden Valley 5800
Location:	Township 20 North, Range 18 West, Sections 2, 3, 4, 8, 9, 10, 11, 14, 16 Township 21 North, Range 18 West, Section 34 Mohave County, Arizona
Land Owner:	American Land Management, L.L.C.

The Arizona Department of Water Resources has evaluated the Analysis of Adequate Water Supply application for Golden Valley 5800 pursuant to A.A.C. R12-15-723. The proposed development includes 32,000 single-family residential lots. Water provider for the master planned community has not yet been selected. Conclusions of the review are indicated below based on the adequate water supply criteria referenced in A.R.S. § 45-108 and A.A.C. R12-15-701, 715, 723 *et seq.*

- **Physical, Continuous, and Legal Availability of Water for 100 Years**
  On the basis of the Department's review, the Department has determined that 9,000.00 acre-feet per year of groundwater will be **physically available**, which is less than the applicant's projected build out demands for the development, including system losses, of 15910.90 acre-feet per year. The application did not specify a provider, and the water provider has not yet been selected. Therefore, both **legal availability** and **continuous availability** of the water are not proven at this time. These requirements of an Analysis of Adequate Water Supply will be re-evaluated for each application for a Water Adequacy Report. Applications for Water Adequacy Reports that follow the Analysis of Adequate Supply will need to reference this letter to demonstrate physical availability. Individual Notices of Intent to Serve will be required for each application for a Water Adequacy Report.

- Adequate Water Quality
  Water quality has not been demonstrated at this time. This requirement of an Analysis of Adequate Water Supply will be re-evaluated for each application for a Water Adequacy Report.

Celebrating 25 Years

A-15
admitted

The term of this Analysis of Adequate Water Supply is ten years from the date of this letter and may be renewed upon request, subject to approval by the Department. Throughout the term of this determination, the projected demand of this development will be considered when reviewing other requests for adequate water supply in the area.

Prior to obtaining plat approval by the local platting authority and approval of the public report by the Department of Real Estate, a Water Adequacy Report must be obtained for each subdivision plat. The findings of this Analysis of Adequate Water Supply may be used to demonstrate that certain requirements for a Water Adequacy Report have been met. This determination may be invalidated if the development plan or other conditions change prior to filing for a Water Adequacy Report.

Questions may be directed to the Office of Assured/Adequate Water Supply at (602) 417-2465.

Sandra Fabritz-Whitney

Sandra Fabritz-Whitney, Assistant Director
Water Management Division

cc: Greg Wallace, E. L. Montgomery and Associates
Alan R. Dulaney, Office of Assured/Adequate Water Supply

ARIZONA DEPARTMENT OF WATER RESOURCES
Office of Assured and Adequate Water Supply
3550 North Central Ave., Phoenix, Arizona 85012
Telephone (602) 771-8585
Fax (602) 771-8689

Janet Napolitano
Governor

Herbert R. Guenther
Director

ANALYSIS OF ADEQUATE WATER SUPPLY

August 14, 2006

File Number:	23-401823.0001
Development:	Golden Valley 5800
Location:	Township 20 North, Range 18 West, Sections 3,4,8,9,10 & 16 Mohave County, Arizona
Land Owner:	American Land Management, LLC, a Nevada Limited Liability Company

The Arizona Department of Water Resources has evaluated the Analysis of Adequate Water Supply application for Golden Valley 5800 pursuant to A.A.C. R12-15-723. This analysis for effluent is based upon an initial supply of groundwater demonstrated by a previously issued analysis. The proposed development includes 13,658 single-family residential lots and 12,775 multi-family units. There will also be a golf course, park areas, commercial development and schools. The owner has indicated that most non-residential open space will eventually be irrigated with effluent. The owner has indicated that Perkins Mountain Water Company will serve the master plan community. Conclusions of the review are indicated below based on the adequate water supply criteria referenced in A.R.S. § 45-108 and A.A.C. R12-15-701, 715, 723 *et seq.*

- **Physical, Continuous, and Legal Availability of Water for 100 Years**
  On the basis of the Department's review, the Department has determined that 9,000.00 acre-feet per year of ground water will be continuously and physically available- per the Department's Analysis of Adequate Water Supply (DWR# 23-401823.0000) issued Oct. 19, 2005. Based on that 2005 groundwater analysis, an additional 2,895.69 acre-feet per year of treated effluent will be physically available at build-out for a total of 11,895.69 acre-feet per year, which is less than the applicant's projected build out demands for the development, including system losses, of 12,196.11 acre-feet per year. The application included a Notice of Intent to Serve form, but it is not signed by the provider. The development is not located inside of the current service area of the provider. Therefore, legal availability of the ground water and the effluent are not proven. The projected physical availability of the effluent is proven, assuming that treatment facilities will be constructed as presented. Applications for Water Adequacy Reports that follow the Analysis of Adequate Supply will need to reference this letter. Individual Notices of Intent to Serve will be required for each application for a Water Adequacy Report. A review of the progress of completion of the necessary treatment and delivery systems will be conducted for each application for a Water Adequacy Report.

A-16
admitted

- **Adequate Water Quality**
  Water quality has not been demonstrated at this time. This requirement of an Analysis of Adequate Water Supply will be re-evaluated for each application for a Water Adequacy Report.

The term of this Analysis of Adequate Water Supply is ten years from the date of this letter and may be renewed upon request, subject to approval by the Department. Throughout the term of this determination, the Department, when reviewing other requests for adequate water supply in the area, will consider the projected demand of this development. The demand projected for this development assumes that the conservation measures the applicant has identified to the Department will be required for the homes in this development, including the effluent use requirements for public parks, large turf areas and golf courses and low water use landscaping on the property. Additionally, it must be noted that based upon the limited hydrogeologic data available for the proposed development area, the amount of groundwater that may be physically available to 1,200 feet below land surface for this project may be limited. As additional hydrogeologic data becomes available, applications for Water Adequacy Reports and the determination of physical availability in this analysis may be affected by that additional data.

Prior to obtaining plat approval by the local platting authority and approval of the public report by the Department of Real Estate, a Water Adequacy Report must be obtained for each subdivision plat. The findings of this Analysis of Adequate Water Supply may be used to demonstrate that groundwater and treated effluent supplies are physically available for at least 100 years for purposes of an application for Water Adequacy Report, unless new hydrogeologic data indicates otherwise. Applications for Water Adequacy Reports that follow the Analysis of Adequate Supply will need to reference this letter. This determination may be invalidated if the development plan or other conditions change materially prior to filing for a Water Adequacy Report.

Questions may be directed to the Office of Assured/Adequate Water Supply at (602) 771-8585.

Sandra Fabritz-Whitney

Sandra Fabritz-Whitney, Assistant Director
Water Management Division

cc: Perkins Mountain Water Company
American Land Management, LLC
Rick Obenshain, Office of Assured/Adequate Water Supply
Nicole Swindle, Legal Division

ARIZONA DEPARTMENT OF WATER RESOURCES
Office of Assured and Adequate Water Supply
2nd Floor, 3550 N. Central Ave., Phoenix, AZ 85012
Telephone (602) 771-8585
Fax (602) 771-8689

Janet Napolitano
Governor

Herbert R. Guenther
Director

RECEIVED
JAN 29 2007
SNELL & WILMER

January 25, 2007

Jeff Crockett
Snell & Wilmer, L.L.P.
One Arizona Center
Phoenix, AZ 85004-2202

RE: Golden Valley 5800
Physical Availability

Mr. Crockett:

In responding to your request as to the physical availability of water associated with the various adequacy applications within the Golden Valley 5800 master plan, my staff has reviewed our files and reviewed the recent information submitted by Errol L. Montgomery & Associates (EM&A) dated September 14, 2006. In addition, you indicated that Perkins Mountain Water Company (PMWC) has applied to the Arizona Corporation Commission (ACC) to establish a new Certificate of Convenience and Necessity (CC&N) to include the Golden Valley 5800 master plan area. Confirmation of the total supplies and demands associated with the Golden Valley 5800 master plan is needed for this CC&N application.

As you may be aware, the Department issued an Analysis of Adequate Water Supply to Golden Valley 5800 on October 19, 2005. While the application was for the entire Golden Valley Ranch master plan, the Department could not issue an adequate finding for this entire master plan as initially submitted. The original master plan for this 2005 application called for 32,000 single-family lots, golf courses, schools, parks and other common areas, and over 600 acres of commercial uses. The Department determined that this total demand would be nearly 15,000 acre-feet per year (af/yr). Insufficient demonstration of physical availability of groundwater prevented the Department from issuing the water analysis to cover the projected demands of the entire master plan. The Department determined, based upon the hydrologic information submitted, that only 9,000 af/yr of groundwater could be demonstrated to be physically available for 100 years. The application at that time did not indicate who the water provider would be; therefore, legal availability and proof of adequate water quality were not demonstrated on this 2005 water analysis.

In early 2006, as part of the requirements for a general plan amendment conducted by the local zoning authority, Mohave County asked the Department for comment regarding available water supplies for the initial phases of the Golden Valley 5800 master plan. According to information

A-17
admitted

provided by Stanley Consultants (Stanley), the proposed initial phases of Golden Valley Ranch (Phases 1, 2, and 3) consisted of approximately 485 acres and 1,859 single family lots. Using the generic plans provided by Stanley for phases 1, 2, and 3, of Golden Valley Ranch, the Department completed a rough calculation of projected demands in February of 2006. The Department made several assumptions on population, landscaping and other factors that will impact the overall demand estimate. The Department included one 18-hole golf course, included approximately half of the projected commercial acreage from the 2005 analysis (317 acres), and made landscaping assumptions on the 89 acres of common area/open space. Using these assumptions and the demand associated with 1,859 lots, the department calculated the demand to be 2,447 af/yr for phases 1, 2, and 3. This was well within the 9,000 af/yr of groundwater demonstrated to be available on the October 2005 analysis.

Please be aware that this was a rough estimate based upon the general plan proposal as submitted by Stanley. This is not the final water adequacy determination as required under statute (A.R.S. §45-108). Demands for the proposed development area will likely be different depending upon the final density and community design. Demands may be reduced with less water intensive landscaping, and other measures such as effluent use in the proposed parks and golf courses. Estimated demands may also increase if other uses the Department is not aware of at this time are included in the subdivision. It should also be noted that the Department could not consider PMWC to be the provider for the proposed development until such time as the ACC approves the inclusion of the proposed development within PMWC's CC&N.

Additionally, a second Analysis of Adequate Water Supply for Golden Valley 5800 was issued by the Department on August 14, 2006. This version of the master plan had a significantly reduced lot count when compared to the original master plan submitted in 2005. The 2006 master plan contained 13,658 single-family lots, 12,775 multi-family units as well as a golf course, park areas, commercial development, and schools. This analysis indicated that the supply would be effluent generated by the 9,000 af/yr of groundwater demonstrated to be available on the initial 2005 water analysis. The Department determined that a total of 2,895 af/yr of effluent would be available. The application indicated that the majority of the non-residential open space would be irrigated with this effluent supply. The total supply demonstrated by both the 2005 groundwater analysis and the 2006 effluent analysis would be 11,895 af/yr. This was still less than the 12,196 af/yr of estimated demand associated with the second master plan submitted with the 2006 application (a shortage of approximately 301 af/yr).

Subsequently, on September 14, 2006, EM&A submitted to the department what appears to be a draft modification of the 2006 effluent analysis. In that draft application the master plan was apparently modified again to reduce high water use landscaping in the open spaces. It appears as though large turf tracts have been replaced with low water use landscaping. The demand numbers presented with the draft application have used the Department's standard demand methodology and therefore appear correct. The new demand (both groundwater and effluent) appears to have been reduced to 11,566 af/yr, which is 329 af/yr less than the 11,895 af/yr of physical supplies demonstrated in combining the 2005 and 2006 analysis. Please be aware that since this was not an official application the Department has not made a final determination on the demand associated

with this latest version of the master plan. Most critically, the master plan itself was not included in the September 2006 draft and therefore the Department cannot confirm the actual estimated demands without reviewing the latest version of the master plan. This will require a new analysis application from the developer in order for the Department to make an official determination.

While it is unusual to see multiple analysis applications for a single master plan as in this case, it is not unusual to see changes from the initial generic master plan to final plat(s). Developers often maximize density in the initial phases of planning knowing that density is often required to be reduced due to zoning changes, flood control issues, and other planning and environmental factors. The intent of the Analysis application is to provide the developer a determination of available water supplies without the costs associated with the final detailed engineering associated with final plats. Developers often modify the final plats during the detailed planning process so the demands fit within the determined available water supplies. I hope this clarifies for you the current status of the analysis of water adequacy for Golden Valley 5800. If you have any additional questions, please feel free to call me at (602) 771-8590

Sincerely,

Douglas W. Dunham, Manager
Office of Assured and Adequate Water Supply

CC: Sandy Fabritz-Whitney, ADWR
Steve Olea, ACC
Kristen Keener-Busby, Department of Commerce
Richard Obenshain, ADWR
Tom Whitmer, ADWR
Ms. Christine Ballard, Mohave County Planning and Zoning Department
Ray Jones, Perkins Mountain Water Company

May 8, 2006

Blessing Chukwu
Arizona Corporation Commission
1200 W. Washington
Phoenix, AZ 85007

RE: Perkins Mountain Water Company

Dear Blessing:

You had several questions regarding how the water adequacy program functions, issued and pending water adequacy applications, and general hydrologic conditions in the area surrounding Perkins Mountain Water Company, Mohave County, Arizona.

Mohave County Applications
The Department has provided you a list of all known pending and issued water adequacy applications in Mohave County. This list has been compiled from ADWR's database. Where available the list includes name of the subdivision, number of lots, demand, groundwater sub-basin or basin, and water provider. You should be aware that when the Department reviews applications for water adequacy determinations, it must take into account known water users in the area. This includes existing recorded plats that may predate the water adequacy program. You should also be aware that the Department does not regulate groundwater use outside of the Active Management Areas (AMA's) and therefore the Department may not be aware of all groundwater users in the area. As we become aware of groundwater uses in a particular area we incorporate those demands into our reviews of available supplies, but this is not comprehensive.

A summary of some of the specific projects you mentioned are outlined below:

Village at White Hills: The Department has a pending Analysis of Water Adequacy application for the Villages at White Hills. At this time the application is considered administratively complete but incorrect. It is the Departments understanding that the applicant is currently conducting fieldwork to provide the Department additional hydrologic data. According to information submitted, the development will consist of 27,464 single-family homes, 8,000 multi-family units with 236.4 non-residential acres consisting of commercial areas, schools, parks, opens space and common areas. At this point, based upon the information currently on file with the Department, the demands are estimated to be 15,737.91 acre-feet per year. A water provider was not indicated on the application.

Ranch at White Hills: The Department issued an Analysis of Water Adequacy for the Ranch at White Hills in April of 2006. The proposed development will consist of 20,500 single-family and 4,500 multi-family units. There will be golf course and park areas within the development. The owner has indicated treated effluent will be used to water these non-residential areas. On the basis of the Department's review, the Department has determined that the applicant has demonstrated that 7,573 acre-feet per year of groundwater and 2,734 acre-feet per year of treated effluent projected at build-out will be physically available, which exceeds the applicant's projected build-out demands for the development of 7,976 acre-feet per year. The projected groundwater demand for this project (7,573 acre-feet per year) combined with the current and committed demand for existing uses and platted but undeveloped lots in the project area (3,472 acre-feet per year) results in a total groundwater demand of 11,045 acre-feet per year or 1,104,500 acre-feet after 100 years. The applicant identified Double Diamond Utilities as the possible municipal provider. However, the utility is not yet established. The application did not include a Notice of Intent to Serve form and is not within the service area boundaries of a water provider at this time. Individual Notices of Intent to Serve, evidence of the municipal provider's legal authority to serve the subdivision, and evidence of the wastewater treatment plant capacity will be required for each application for a Water Adequacy Report. Additionally, the requirements of an adequacy determination, the legal and continuous availability of the water supply, are not proven at this time. These requirements will have to be demonstrated at the time the developer applies for subsequent water reports.

A-18
admitted

Golden Valley South: The Department issued an Analysis of Water Adequacy for Golden Valley South in October of 2005. The overall master plan consisted of 32,000 single-family lots, golf courses, schools, parks, and other common areas, and over 600 acres of commercial uses. The total projected demand was estimated at 15,000 acre-feet per year. The Department found that only 9,000 acre-feet per year of groundwater was available. While the analysis application did not indicate who the municipal provider would be, it is the Departments understanding that Perkins Mountain Water Company is seeking to expand it's CC&N to include the Golden Valley South development. In addition, the Department understands that the developer is seeking preliminary plat approval from Mohave County for the initial phases of Golden Valley Ranch (Phases 1, 2, and 3). In a February 17, 2006 letter to Mohave County, the Department estimated that the first three phases would have a demand of approximately 2,447 acre-feet per year, within the 9,000 acre-feet per year determined to be available in the October 2005 analysis. Please be aware that this is a rough estimate based upon information supplied by the County, and not the final adequacy determination as required under A.R.S. § 45-108. The developer will be required to file for individual water adequacy reports for each plat in the proposed development.

Mineral Park Mine: At this time the Department is not aware of any of the specific details of the proposed expansion of Mineral Park Mine. Since the Department is not authorized to regulate specific industrial users of groundwater such as a mine outside of the AMA's the operators of the mine are not required to report current uses or seek Department approval of the proposed expansion. The Department has only become aware of the possible mine expansion through informal conversations with Mohave County.

Aquifer Studies

The Department has not completed a comprehensive, aquifer wide study. The Department in conjunction with the United States Geological Survey (USGS) is initiating studies in the northern Mohave County area. The basins that will be examined are the Detrital, Hualapai, and Sacramento. Some of the initial fieldwork has been completed. However, the full studies and final reports are expected to take three to four years with completion dates projected to be in the 2009, 2010 timeframe.

Recharge and Recovery

The Department does not require recharge and recovery of effluent, within the AMA's or outside of the AMA's. There are some existing incentives within the AMA's for effluent use, however these do not exist outside of the AMA's[1]. Possible uses of effluent (both within the AMA's and outside of the AMA's) include the direct use of effluent to reduce the groundwater demand or an increase the physical availability of supplies by recharge and recovery of the effluent. However, the Department does not require these activities. An applicant may chose to include these types of activities in a proposed development to help augment the physical supplies. An example of this is the proposed development plan for the Ranch at White Hills. In this case the applicant chose to include direct use of effluent for landscaping uses in common areas along with other water conservation methodologies, to reduce the groundwater demand. Although recharge credits may be generated outside of the AMA's their primary use within AMA's is to meet the consistency with management goal of the AMA in the assured water supply program. No such requirement exists outside of the AMA's, so recharge and recovery activities of effluent are usually conducted to augment physical supplies or as a disposal method for the effluent.

If you have any additional questions please feel free to contact me at (602) 771-8590.

Sincerely,

Doug Dunham, Manager
Office of Assured and Adequate Water Supply

---

[1] Existing incentives in the AMA include (among others): greater allowance for turf application on golf courses, and for assured water supply determinations, effluent is considered a renewable supply, and therefore assists applicants in meeting the consistency with management goal requirement in the assured water supply review.

Blessing Chukwu

From: Steven Olea
Sent: Wednesday, May 17, 2006 2:48 PM
To: Blessing Chukwu
Cc: Dunham, Doug (dwdunham@azwater.gov)
Subject: FW: Mohave questions

RECEIVED

2006 MAY 18 P 12: 11

AZ CORP COMMISSION
DOCUMENT CONTROL

Attachments: ACC Mohave questions.doc

Perkins Mountain Water Company
(W-20380A-05-0490)
and
Perkins Mountain Utility Company
(SW-20379A-05-0489)

ACC Mohave
uestions.doc (27 K..

-----Original Message-----
From: Doug Dunham [mailto:dwdunham@azwater.gov]
Sent: Tuesday, May 16, 2006 4:53 PM
To: Steven Olea
Subject: Mohave questions

Steve-
attached is a written response to the letter from Blessing. I don't have her e-mail so if you could give it to me or forward this to her it would be appreciated. I will be sending the work schedule from the USGS proposal in PDF. format shortly.

Let me know if you need anything else.
Doug

Douglas W. Dunham, Manager
Office of Assured and Adequate Water Supply Arizona Department of Water Resources 3550 N. Central Ave.
Phoenix, AZ 85012
Phone: (602) 771-8590
Fax: (602) 771-8689

July 2005
REPORT

REGIONAL HYDROGEOLOGY, SOURCE OF WATER SUPPLY, AND PROJECTED 100-YEAR DRAWDOWN IMPACTS IN THE VICINITY OF THE GOLDEN VALLEY SOUTH MASTER PLANNED COMMUNITY MOHAVE COUNTY, ARIZONA

Prepared for:

RHODES HOMES – ARIZONA LLC

REGISTERED GEOLOGIST
CERTIFICATE NO.
19807
WILLIAM R.
VICTOR
DATE SIGNED 7-15-2005
ARIZONA U.S.A.

William R. Victor

Prepared by:

ERROL L. MONTGOMERY & ASSOCIATES, INC.
CONSULTANTS IN HYDROGEOLOGY

7949 EAST ACOMA DRIVE, SUITE 100
SCOTTSDALE, ARIZONA 85260 (480) 948-7747

TUCSON • PHOENIX • FLAGSTAFF • SANTIAGO de CHILE

A-19
Admitted

ERROL L. MONTGOMERY & ASSOCIATES, INC.
CONSULTANTS IN HYDROGEOLOGY

7949 EAST ACOMA DRIVE, SUITE 100
SCOTTSDALE, ARIZONA 85260 (480) 948-7747
FAX: (480) 948-8737
www.elmontgomery.com
E-MAIL: info@elmontgomery.com

ERROL L. MONTGOMERY, P.G.
WILLIAM R. VICTOR, P.G.
RONALD H. DEWITT, P.G.
MARK M. CROSS, P.G.
DENNIS G. HALL, P.G.
TODD KEAY, P.G.
JAMES S. DAVIS, P.G.
MICHAEL J. ROSKO, P.G.
CHARLES F. BARTER (1937-1999)
DANIEL S. WEBER, P.G.
LESLIE T. KATZ, P.G.

July 15, 2005

Mr. Doug Dunham
ARIZONA DEPARTMENT OF WATER RESOURCES
Office of Assured Water Supply
500 N. 3rd Street
Phoenix, Arizona 85004

Dear Mr. Dunham:

Enclosed please find the materials that Errol L. Montgomery & Associates, Inc., has prepared on behalf of American Land Management, LLC, in support of an Analysis of Water Adequacy for the Golden Valley South Master Planned Community in Mohave County, Arizona. The materials include copies of the following documents that we are submitting for your review and approval.

1) Application for Arizona Department of Water Resources (ADWR) Analysis of Water Adequacy

2) Hydrologic Study in Support of the Analysis of Water Adequacy

3) Copies of demand calculations for a lower density and maximum density development utilizing data from ADWR and Mohave County

4) Copies of the preliminary Planned Unit Development

5) A notice of intent to serve as yet incomplete since water company negotiations are underway with various potential providers

6) Ownership documents verifying ownership of all parcels listed in item 3 as belonging to American Land Management, LLC

Although we are aware that not having the water company information finalized can result in delays to a formal application, we do wish to proceed immediately with the Analysis of Water Adequacy.

If you have any questions or require clarification of any documents in the application, please do not hesitate to contact Greg Wallace or me.

Sincerely,

ERROL L. MONTGOMERY & ASSOCIATES, INC.

William R Victor

William R. Victor, P.G.

Enclosures (2 copies)

ERROL L. MONTGOMERY & ASSOCIATES, INC.

CONTENTS

APPLICATION FOR AN ANALYSIS OF WATER ADEQUACY

ATTACHMENTS

1 CERTIFICATE OF ASSURED WATER SUPPLY GENERIC DEMAND CALCULATOR

2 PRELIMINARY PLAT, GOLDEN VALLEY SOUTH / RHODES HOMES

3 NOTICE OF INTENT TO SERVE

4 OWNERSHIP DUCUMENTS

5 HYDROLOGIC STUDY

TABLES

1 WELL INVENTORY FOR SACRAMENTO VALLEY, MOHAVE COUNTY, ARIZONA

2 RESULTS FOR LABORATORY CHEMICAL ANALYSES FOR GROUNDWATER SAMPLES OBTAINED FROM GOLDEN VALLEY WELL GV-1, MOHAVE COUNTY, ARIZONA

ILLUSTRATIONS

1 LOCATION MAP FOR SACRAMENTO VALLEY

2 WATER LEVEL HYDROGRAPH FOR SELECTED WELLS IN SACRAMENTO VALLEY, MOHAVE COUNTY, ARIZONA

3 WATER LEVEL DRAWDOWN GRAPH FOR PUMPED WELL GV-1

4 WATER LEVEL RECOVERY GRAPH FOR PUMPED WELL GV-1

CONTENTS – continued

ILLUSTRATIONS

5 PROJECTED GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT GOLDEN VALLEY SOUTH

6 HYDROGRAPH OF GROUNDWATER LEVEL DRAWDOWN AT POINT OF MAXIMUM DRAWDOWN RESULTING FROM PUMPING 15,000 ACRE-FEET PER YEAR AT GOLDEN VALLEY SOUTH MASTER PLANNED COMMUNITY, MOHAVE COUNTY, ARIZONA

APPENDICES

A WELL NUMBERING SYSTEM

B LITHOLOGIC DESCRIPTIONS FOR DRILL CUTTINGS SAMPLES FOR GOLDEN VALLEY WELL GV-1

C WATER QUALITY DATA, FOR SACRAMENTO VALLEY BASIN (FROM ADEQ OPEN FILE REPORT 01-04, JUNE 2001)

D THWELLS MODEL WELL LOCATIONS, AQUIFER PARAMETERS, PUMPING RATES, AND RESULTS

ERROL L. MONTGOMERY & ASSOCIATES, INC.

APPLICATION FOR AN ANALYSIS OF WATER ADEQUACY

Arizona Department of Water Resources
OFFICE OF ASSURED AND ADEQUATE WATER SUPPLY
500 NORTH THIRD STREET
PHOENIX, ARIZONA 85004-3921
(602) 417-2460

APPLICATION FOR AN ANALYSIS OF WATER ADEQUACY

(Refer to application guidelines for assistance in completing this form)

PART A - GENERAL INFORMATION

1. Name of development: Golden Valley 5800

2. Location: 20N (Township) 18W (Range) 2,3,4,8,9,10,11,14,16 (Section(s)) Mohave (County)

2. Location: 21N (Township) 18W (Range) 34 (Section(s)) Mohave (County)

3. Owner Name: AMERICAN LAND MANAGEMENT LLC Phone: 702-873-5582 Address: 4730 South Fort Apache Road, Suite 300 - Las Vegas, NV 89147

4. Water Provider: Pioneer Valley water co. or new water company (undecided) Phone: _____ Address: _____

5. Consultant Name: Errol L. Montgomery and Associates, Inc. Phone: 48-948-7747
Address: 7949 East Acome Drive, Suite 100 Scottsdale, AZ. 85260

6. Primary Contact:
Name: Greg Wallace Phone: 602-818-2399
Address: 7949 East Acome Drive, Suite 100 Scottsdale, AZ. 85260

PART B - WATER DEMAND INFORMATION

1. Include a map of the proposed development, and reference as an attachment: Attatchment 1

2. Number of lots: 32,000 Size of lots: 7500 Total Acreage: 5,800

3. Total demand projected for development: 16,000 acre-feet (AF) per year
Projected water demand per residential lot: .58 gallons per day
Non-Residential demands: Golf course: 600 AF/year Parks: 230 AF/year Lakes: _____ AF/year
Other (specify): _____ _____ AF/year

4. Expected year of completion (build-out): 2015

PART C- WATER SUPPLY INFORMATION

1. Please indicate source(s) of water to be used: X Groundwater __ Surface Water __ Effluent
(If the sources includes non-groundwater supplies, please complete "Supplement C.")

2. Provide a hydrologic study, and reference the attachment: #5

3. a. Method of water distribution: X central distribution system ___ dry lot subdivision (individual wells)

   b. If water is to be obtained from a water provider, include a "Notice of Intent to Serve" agreement and reference the attachment: _____

4. If any wells proposed to serve the development are within one mile of a Water Quality Assurance Revolving Fund or Superfund site (or any monitor wells associated with the site), or if the proposed water supply fails to meet safe drinking water quality standards, provide a study identifying and describing this water and reference the attachment: N/A

5. If a "Letter of Water Availability" has previously been issued for this provide a copy of the document and reference the attachment: n/a

PART D - FEES

The application fee for an Analysis of Water Adequacy is $ 1,000. The payment may be made by cash, check, or in some cases, by entry in an existing Department fee credit account. Checks should be made payable to the Department of Water Resources. **Failure to enclose the required fees will cause the application to be returned.**

Fee for Application for Analysis of Water Adequacy: $ 1000.00

I DO HEREBY certify that the information contained in this application and all information accompanying it is true and correct to the best of my knowledge and belief.

Charles Sakuva	Charles Sa C	6/9/05
Owner Name (Please type or print)	Signature	Date

ERROL L. MONTGOMERY & ASSOCIATES, INC.

ATTACHMENT 1

CERTIFICATE OF ASSURED WATER SUPPLY
GENERIC DEMAND CALCULATOR

January 18, 2005

CERTIFICATE OF ASSURED WATER SUPPLY GENERIC DEMAND CALCULATOR

INSTRUCTIONS: This spreadsheet is designed to help you calculate the water demand for your new subdivision for purposes of applying for a Certificate of Assured Water Supply. Please fill out all blue boxes. If you need help, contact the Office of Assured and Adequate Water Supply at (602) 417-2465.

NOTE: This sheet, when completed, does not constitute approval of the demand estimate for your subdivision. It is intended for general estimation purposes only. Final official demand estimates will be determined by the Department upon review of your complete application.

Enter the AMA the subdivision is located in*: na

* Enter PHX for Phoenix, TUC for Tucson, PIN for Pinal, PRE for Prescott or SCR for Santa Cruz. If you are not located within an AMA, or are not sure which AMA you are located in, contact the Office of Assured and Adequate Water Supply at (602) 417-2465.

Residential Usage

Category	PPHU	GPCD or per house/day	Demand/HU/YR (af/yr)	No. HU (Lots)	Residential Demand/Yr (af/yr)
Single Family (int)	2.47	70.00	0.22	24254.00	5335.88
Multi-Family (int)	2.40	57.00	0.15	9010.00	1380.65
Single Family Landscape (ext)	1.00	125.00	0.14	24254.00	3396.00
Multi-Family Landscape (ext)	1.00	100.00	0.11	9010.00	1009.25
Single family Demand/HU/YR			0.36		
Multifamily Demand/HU/YR			0.27		

*NOTE: If the application is in the Pinal AMA, and lot sizes are no greater than 10,000 sq. ft., 125 GPCD is used to estimate both interior and exterior demand for single family homes. Do not enter lot numbers under the Landscape rows. Contact the Office of Assured and Adequate Water Supply for more information.

	Square Feet	Acres	Demand Factor (af/yr)	No. HU (Lots)	Large Lot Adjustment Demand/Yr (af/yr)
Average Lot Size (sq. ft)**	7400.00	0.17			
TMP Model Lot Size (sq. ft)	7,500 - 10,000	0.17 - 0.23			
Large Lot Adjustment	0.00	0.00			
1/2 low water use	0.00	0.00	1.50	33264.00	0.00
1/2 turf	0.00	0.00	No AMA	33264.00	

**NOTE: If the subdivision contains several groupings of lot sizes, the large lot adjustment needs to be calculated for each grouping of large lot sizes. Contact the Office of Assured and Adequate Water Supply for assistance in calculating the large lot adjustment for subdivisions with several groupings of large lot sizes.

Total Residential Demand 11121.78

Non-Residential Usage***

For each category please enter either square feet or acres of land for that type of non-residential use within your subdivision.

Category	Square Feet	Acres	Demand Factor (af/ac)		Non-Residential Demand (af/yr)
Common Area1		174.00	1.50	low water use	261.00
Common Area2		206.00	5.00	turf	1030.00
Right of Way			1.50	low water use	0.00
Golf Course		110.00	6.00	6.00	660.00
Commercial use		635.20	2.25	all acres	1429.20
Public Pool (length x width = square feet)		0.00	AMA TMP model	pool	0.00
Parks1		288.60	1.50	low water use	432.90
Parks2		288.60	No AMA	turf	0.00
Retention/Detention Basins		0.00	1.50	low water use	0.00
Retention/Detention Basins		12.60	8.00	turf	100.80
School Landscape1			1.50	low water use	0.00
School Landscape2		40.50	5.00	turf	202.50
School interior****		4500.00	25 GPCD	interior demand	126.02

***NOTE: If application is for a change of ownership from a previously issued Certificate of Assured Water Supply, and is for only a portion of the original Certificate, contact the Office of Assured and Adequate Water Supply to pro-rate non-residential area acreage.

****NOTE: For school interior demand, enter the number of students. If the proposed school is a high school or middle school, the demand factor is 43 GPCD.

Total Non-Residential Demand 2243.00

Distribution Losses

	Residential	Non-Residential	Total	Loss Factor %	Distribution Losses (af/yr)
Demand af/yr	11121.78	2243.00	13364.78	10.00	1336.48

Construction

	No. of Lots	Demand (gals/lot)	100 yr demand (af)		Construction Demand (af/yr)
	33264.00	10000.00	1255.51		12.56

Total Demand Per Year

Residential Usage af/yr	Non-Residential Usage	Lost & Unaccounted for	Construction	Total Non-Res	Total Demand Per Year (af/yr)
11121.78	2243.00	1336.48	12.56	3592.03	14713.81
Residential Usage GPCD					Total Demand GPCD
122					161
Annual Build Out Demand					
14713.81					

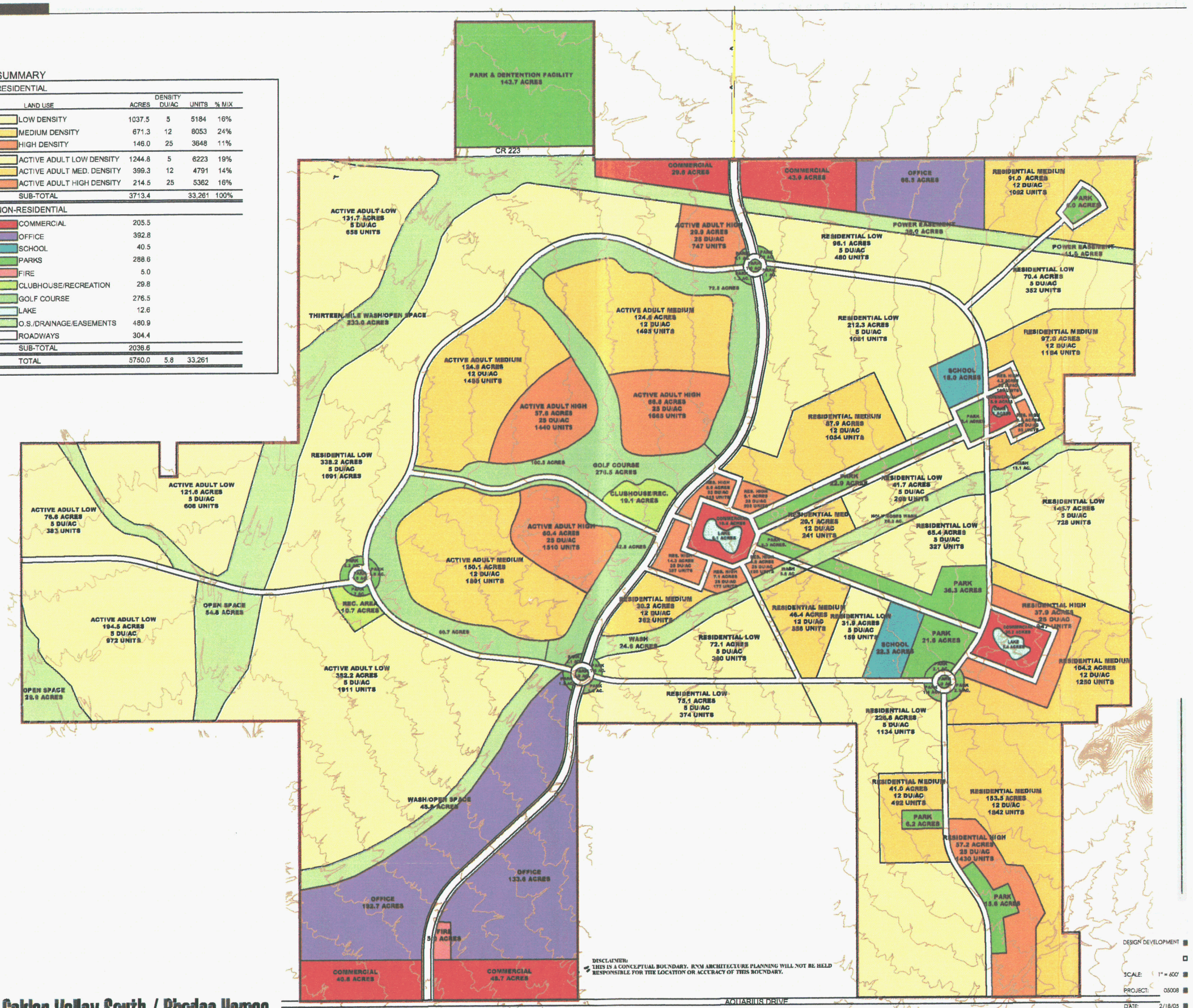
SUMMARY

RESIDENTIAL

LAND USE	ACRES	DENSITY DU/AC	UNITS	% MIX
LOW DENSITY	1037.5	5	5184	16%
MEDIUM DENSITY	671.3	12	8053	24%
HIGH DENSITY	146.0	25	3648	11%
ACTIVE ADULT LOW DENSITY	1244.8	5	6223	19%
ACTIVE ADULT MED. DENSITY	399.3	12	4791	14%
ACTIVE ADULT HIGH DENSITY	214.5	25	5362	16%
SUB-TOTAL	3713.4		33,261	100%

NON-RESIDENTIAL

COMMERCIAL	205.5
OFFICE	392.8
SCHOOL	40.5
PARKS	288.6
FIRE	5.0
CLUBHOUSE/RECREATION	29.8
GOLF COURSE	276.5
LAKE	12.6
O.S./DRAINAGE/EASEMENTS	480.9
ROADWAYS	304.4
SUB-TOTAL	2036.6
TOTAL	5750.0 5.8 33,261



DISCLAIMER:
THIS IS A CONCEPTUAL BOUNDARY. RVM ARCHITECTURE PLANNING WILL NOT BE HELD RESPONSIBLE FOR THE LOCATION OR ACCURACY OF THIS BOUNDARY.

Golden Valley South / Rhodes Homes

Mohave County, Arizona

DESIGN DEVELOPMENT

SCALE: 1" = 600'

PROJECT: 05008

DATE: 2/18/05

RVM ARCHITECTURE PLANNING
4411 BELLA AVENUE
NEWPORT BEACH, CA 92660
949 . 833 . 1603 TEL
949 . 833 . 1602 FAX
INFO@RVMDESIGN.COM

0 600' 1200'

ERROL L. MONTGOMERY & ASSOCIATES, INC.

ATTACHMENT 3

NOTICE OF INTENT TO SERVE

ARIZONA DEPARTMENT OF WATER RESOURCES

OFFICE OF ASSURED WATER SUPPLY
500 NORTH THIRD STREET
PHOENIX, ARIZONA 85004
(602) 417-2460

SUPPLEMENT TO APPLICATION FOR AN ANALYSIS OF ADEQUATE WATER SUPPLY

NOTICE OF INTENT TO SERVE

Municipal Water Provider Name (please type or print): Perkins Mountain Water Company

ADEQ Public Water System Number (please indicate the number valid for this subdivision):_____

Subdivision/Development Name: Golden Valley South

The undersigned municipal water provider agrees to provide to the development indicated above an amount of water sufficient to satisfy the water demands of the development as stated in the application for an analysis of adequate water supply or water adequacy. This Notice of Intent to Serve is conditioned upon the provider's receipt of necessary approvals from the Arizona Corporation Commission and other regulatory agencies, and the provider's receipt of all necessary payments.

The municipal water provider, if a private water company, further attests that the subject development is either within the boundaries of the company's existing Certificate of Convenience and Necessity or that a formal request has been filed with the Arizona Corporation Commission to extend the boundaries to include the development.

This Notice of Intent To Serve Agreement is agreed to under the signature of an agent of the municipal water provider authorized to sign the agreement:

Name of Municipal Water Provider's authorized agent (please type or print): Kirk Brynjulson

Signature of Authorized Agent of Municipal Water Provider

Date

ERROL L. MONTGOMERY & ASSOCIATES, INC.

ATTACHMENT 4

OWNERSHIP DOCUMENTS

Parcel Information (Click for Tax Information)

Tax Year:	2005
Parcel:	215-01-080 **Click for Improvement Information**
Site Address:	UNK STREET ADDRESS
Owner:	DESERT COMMUNITIES INC ATTN: M WALKER
Mailing Address:	4730 S FORT APACHE RD STE 300 , LAS VEGAS , NV 89147
Tax Area:	0430
Full Cash Value:	$60,421.00
Assessed Full Cash Value:	$9,667.00
Limited Value:	$60,421.00
Assessed Limited Value:	$9,667.00
Value Method:	Land Market Model
Exempt Amount:	$0.00
Exemption Type:	
Use Code:	0004
Property Use:	VACANT LAND
Class Code:	Ag, Vacant Land or Non-profit
Assessment Ratio:	16.00%

Last Sale Information (Click for more Sale Info)

Sale Price:	0
Sale Date:	1/3/2005
Recorded Instr Type:	WARRANTY DEED
Book:	5273
Page:	721

Legal Description Information

Parcel Size:	604.21 ACRES
Township, Range and Section:	20N 18W 2
Legal Description:	ALL EXCEPT THE SE4 SE4, W2 NW4 NW4 NW4 NE4 NE4 & EXCEPT THE N & W 50' CONT 604.21 AC 215-01-005(215-01-080 & COUNTY RD)

Parcel Information (Click for Tax Information)

Tax Year:	2005
Parcel:	215-01-092 **Click for Improvement Information**
Site Address:	
Owner:	AMERICAN LAND MANAGEMENT LLC
Mailing Address:	6101 S MUSTANG CIR , SIOUX FALLS , SD 57108
Tax Area:	0430
Full Cash Value:	$62,254.00
Assessed Full Cash Value:	$9,961.00
Limited Value:	$62,254.00
Assessed Limited Value:	$9,961.00
Value Method:	Land Market Model
Exempt Amount:	$0.00
Exemption Type:	
Use Code:	0004
Property Use:	VACANT LAND
Class Code:	Ag, Vacant Land or Non-profit
Assessment Ratio:	16.00%

Last Sale Information (Click for more Sale Info)

Sale Price:	0
Sale Date:	1/1/2005
Recorded Instr Type:	SPECIAL WARRANTY DEED
Book:	5388
Page:	29

Legal Description Information

Parcel Size:	622.54 ACRES
Township, Range and Section:	20N 18W 3
Legal Description:	TRACT: 0 EXCEPT S2 SE4 SE4 NE4 NE4, N2 NE4 NE4 SE4 SE4, N2 NW4 NW4 SW4 SW4, S2 SW4 SW4 NW4 NW4 AND EXCEPT THE N 50', W 50' & E 50' THEREOF(1603/93;1708/361) AND EXCEPT A 100' STRIP OF LAND ACROSS SEC 3, LYING 50' ON EACH SIDE OF THE FOLL DESC CENTERLINE: BEG AT THE PT OF INTERSECTION OF AZTEC RD & THE S R/W AS RECORDED IN 1603/93 OF SAID SEC 3, SAID PT BEING S00 DEG 00'16 E 50'FROM N LN SEC 3 AND N89 DEG 57'15 E ALONG SAID N LINE 2923.56' ML

Parcel Information (Click for Tax Information)

Tax Year:	2005
Parcel:	215-16-005 **Click for Improvement Information**
Site Address:	UNK STREET ADDRESS
Owner:	AMERICAN LAND MANAGEMENT LLC
Mailing Address:	6101 S MUSTANG CIR , SIOUX FALLS , SD 57108
Tax Area:	0430
Full Cash Value:	$63,561.00
Assessed Full Cash Value:	$10,170.00
Limited Value:	$59,265.00
Assessed Limited Value:	$9,482.00
Value Method:	Land Market Model
Exempt Amount:	$0.00
Exemption Type:	
Use Code:	0004
Property Use:	VACANT LAND
Class Code:	Ag, Vacant Land or Non-profit
Assessment Ratio:	16.00%

Last Sale Information (Click for more Sale Info)

Sale Price:	0
Sale Date:	1/1/2005
Recorded Instr Type:	SPECIAL WARRANTY DEED
Book:	5388
Page:	29

Legal Description Information

Parcel Size:	635.61 ACRES
Township, Range and Section:	20N 18W 4
Legal Description:	LOTS 1,2,3 & 4; S2 N2; S2 EXCE PT 5 ACRES LOCATED IN LOT 4 (D SP MILLSITE #7) & EXCEPT BEG AT THE S4 CORNER OF SD SEC 4; TH NLY ALONG THE N-S CENTER SEC LINE 42'; TH WLY PARALLEL TO THE S BNDRY OF SD SEC 4 30' TO THE TPOB; TH NLY PARALLEL TO THE N-S CENTER SEC LINE 233 .35'; TH WLY PARALLEL TO THE S BNDRY OF SEC 4 233.35'; TH SLY PARALLEL TO THE N-S CENTER SEC LINE OF SEC 4 233.35'; TH ELY PARALLEL TO THE S SEC LIN E OF SEC 4 233.35' TO THE TPOB

Parcel Information (Click for Tax Information)

Tax Year:	2005
Parcel:	215-01-048 **Click for Improvement Information**
Site Address:	UNK STREET ADDRESS
Owner:	AMERICAN LAND MANAGEMENT LLC
Mailing Address:	6101 S MUSTANG CIR , SIOUX FALLS , SD 57108
Tax Area:	0430
Full Cash Value:	$63,500.00
Assessed Full Cash Value:	$10,160.00
Limited Value:	$63,500.00
Assessed Limited Value:	$10,160.00
Value Method:	Land Market Model
Exempt Amount:	$0.00
Exemption Type:	
Use Code:	0004
Property Use:	VACANT LAND
Class Code:	Ag, Vacant Land or Non-profit
Assessment Ratio:	16.00%

Last Sale Information (Click for more Sale Info)

Sale Price:	0
Sale Date:	1/1/2005
Recorded Instr Type:	SPECIAL WARRANTY DEED
Book:	5388
Page:	29

Legal Description Information

Parcel Size:	635 ACRES
Township, Range and Section:	20N 18W 8
Legal Description:	E2 NW4 NW4 NE4;NE4 NW4 NE4; S2 NW4 NE4; NE4 NE4;S2 NE4; NW4 & S2; CONT 635 ACRES NEW PARCEL CREATED FROM U S A LAND

Parcel Information (Click for Tax Information)

Tax Year:	2005
Parcel:	215-01-075 **Click for Improvement Information**
Site Address:	UNK STREET ADDRESS
Owner:	AMERICAN LAND MANAGEMENT LLC
Mailing Address:	6101 S MUSTANG CIR , SIOUX FALLS , SD 57108
Tax Area:	0430
Full Cash Value:	$63,394.00
Assessed Full Cash Value:	$10,143.00
Limited Value:	$63,394.00
Assessed Limited Value:	$10,143.00
Value Method:	Land Market Model
Exempt Amount:	$0.00
Exemption Type:	
Use Code:	0004
Property Use:	VACANT LAND
Class Code:	Ag, Vacant Land or Non-profit
Assessment Ratio:	16.00%

Last Sale Information (Click for more Sale Info)

Sale Price:	0
Sale Date:	1/1/2005
Recorded Instr Type:	SPECIAL WARRANTY DEED
Book:	5388
Page:	29

Legal Description Information

Parcel Size:	633.94 ACRES
Township, Range and Section:	20N 18W 9
Legal Description:	ALL EXCEPT THE E 50' CONT 633.94 ACRES M/L 215-01-007 (215-01-075 & RD)

Parcel Information (Click for Tax Information)

Tax Year:	2005
Parcel:	215-01-084 **Click for Improvement Information**
Site Address:	UNK STREET ADDRESS
Owner:	AMERICAN LAND MANAGEMENT LLC
Mailing Address:	6101 S MUSTANG CIR , SIOUX FALLS , SD 57108
Tax Area:	0430
Full Cash Value:	$62,576.00
Assessed Full Cash Value:	$10,012.00
Limited Value:	$62,576.00
Assessed Limited Value:	$10,012.00
Value Method:	Land Market Model
Exempt Amount:	$0.00
Exemption Type:	
Use Code:	0004
Property Use:	VACANT LAND
Class Code:	Ag, Vacant Land or Non-profit
Assessment Ratio:	16.00%

Last Sale Information (Click for more Sale Info)

Sale Price:	1563025
Sale Date:	1/1/2005
Recorded Instr Type:	SPECIAL WARRANTY DEED
Book:	5407
Page:	151

Legal Description Information

Parcel Size:	625.76 ACRES
Township, Range and Section:	20N 18W 10
Legal Description:	EXCEPT N2 NE4 NE4 SE4 SE4; N2 NW4 NW4 SW4 SW4; AND EXCEPT THE W 50' & E 50' CONT 625.76 AC M/L 215-01-076 (215-01-084 & COUNTY ROAD)

Parcel Information (Click for Tax Information)

Tax Year:	2005
Parcel:	215-01-078 **Click for Improvement Information**
Site Address:	UNK STREET ADDRESS
Owner:	DESERT COMMUNITIES INC ATTN: M WALKER
Mailing Address:	4730 S FORT APACHE RD STE 300 , LAS VEGAS , NV 89147
Tax Area:	0430
Full Cash Value:	$62,894.00
Assessed Full Cash Value:	$10,063.00
Limited Value:	$62,894.00
Assessed Limited Value:	$10,063.00
Value Method:	Land Market Model
Exempt Amount:	$0.00
Exemption Type:	
Use Code:	0004
Property Use:	VACANT LAND
Class Code:	Ag, Vacant Land or Non-profit
Assessment Ratio:	16.00%

Last Sale Information (Click for more Sale Info)

Sale Price:	0
Sale Date:	1/3/2005
Recorded Instr Type:	WARRANTY DEED
Book:	5273
Page:	721

Legal Description Information

Parcel Size:	628.94 ACRES
Township, Range and Section:	20N 18W 11
Legal Description:	ALL EXCEPT THE S2 SE4 SE4 SE4 AND EXCEPT THE W 50' CONT 628.94 ACRES M/L 215-01-009(215-01-078 & COUNTY RD)

Parcel Information (Click for Tax Information)

Tax Year:	2005
Parcel:	215-01-079 **Click for Improvement Information**
Site Address:	UNK STREET ADDRESS
Owner:	DESERT COMMUNITIES INC ATTN: M WALKER
Mailing Address:	4730 S FORT APACHE RD STE 300 , LAS VEGAS , NV 89147
Tax Area:	0430
Full Cash Value:	$47,985.00
Assessed Full Cash Value:	$7,678.00
Limited Value:	$47,985.00
Assessed Limited Value:	$7,678.00
Value Method:	Land Market Model
Exempt Amount:	$0.00
Exemption Type:	
Use Code:	0004
Property Use:	VACANT LAND
Class Code:	Ag, Vacant Land or Non-profit
Assessment Ratio:	16.00%

Last Sale Information (Click for more Sale Info)

Sale Price:	0
Sale Date:	1/3/2005
Recorded Instr Type:	WARRANTY DEED
Book:	5273
Page:	721

Legal Description Information

Parcel Size:	479.85 ACRES
Township, Range and Section:	20N 18W 14
Legal Description:	W2, W2 E2, W2 W2 SE4 SE4 EXCEPT THE W 50' AND THE S 42' CONT 479.85 ACRES M/L 215-01-010(215-01-079 & COUNTY ROAD)

Parcel Information (Click for Tax Information)

Tax Year:	2005
Parcel:	215-01-085 **Click for Improvement Information**
Site Address:	UNK STREET ADDRESS
Owner:	AMERICAN LAND MANAGEMENT LLC
Mailing Address:	6101 S MUSTANG CIR , SIOUX FALLS , SD 57108
Tax Area:	0430
Full Cash Value:	$62,890.00
Assessed Full Cash Value:	$10,062.00
Limited Value:	$62,890.00
Assessed Limited Value:	$10,062.00
Value Method:	Land Market Model
Exempt Amount:	$0.00
Exemption Type:	
Use Code:	0004
Property Use:	VACANT LAND
Class Code:	Ag, Vacant Land or Non-profit
Assessment Ratio:	16.00%

Last Sale Information (Click for more Sale Info)

Sale Price:	0
Sale Date:	1/1/2005
Recorded Instr Type:	SPECIAL WARRANTY DEED
Book:	5388
Page:	29

Legal Description Information

Parcel Size:	628.9 ACRES
Township, Range and Section:	20N 18W 16
Legal Description:	EXCEPT THE E 50' & S 42' CONT 628.90 ACRES M/L 215-01-077 (215-01-085 & COUNTY ROAD)

Parcel Information (Click for Tax Information)

Tax Year:	2005
Parcel:	306-63-008 **Click for Improvement Information**
Site Address:	
Owner:	AMERICAN LAND MANAGEMENT LLC
Mailing Address:	6101 S MUSTANG CIR , SIOUX FALLS , SD 57108
Tax Area:	0430
Full Cash Value:	$156,970.00
Assessed Full Cash Value:	$25,115.00
Limited Value:	$156,970.00
Assessed Limited Value:	$25,115.00
Value Method:	Land Market Model
Exempt Amount:	$0.00
Exemption Type:	
Use Code:	0004
Property Use:	VACANT LAND
Class Code:	Ag, Vacant Land or Non-profit
Assessment Ratio:	16.00%

Last Sale Information (Click for more Sale Info)

Sale Price:	0
Sale Date:	1/1/2005
Recorded Instr Type:	SPECIAL WARRANTY DEED
Book:	5388
Page:	29

Legal Description Information

Parcel Size:	156.97 ACRES
Township, Range and Section:	21N 18W 34
Legal Description:	SW4 EXCEPT THE S 50' CONT 156.97 ACRES M/L 306-01-055 (306-01-059 & RD) 306-01-059(306-63-008)TAO

July 2005
REPORT

REGIONAL HYDROGEOLOGY, SOURCE OF WATER SUPPLY, AND PROJECTED 100-YEAR DRAWDOWN IMPACTS IN THE VICINITY OF THE GOLDEN VALLEY SOUTH MASTER PLANNED COMMUNITY MOHAVE COUNTY, ARIZONA

Prepared for:

RHODES HOMES – ARIZONA LLC

Prepared by:

ERROL L. MONTGOMERY & ASSOCIATES, INC.
CONSULTANTS IN HYDROGEOLOGY

7949 EAST ACOMA DRIVE, SUITE 100
SCOTTSDALE, ARIZONA 85260 (480) 948-7747

CONTENTS

Page

SUMMARY AND CONCLUSIONS **1**
INTRODUCTION **8**
HYDROGEOLOGIC CONDITIONS **11**
PREVIOUS INVESTIGATIONS 12
GEOLOGIC CONDITIONS 13
Younger Alluvium 15
Intermediate Alluvium 15
Older Alluvium 16
GEOLOGIC STRUCTURAL FEATURES 17
AQUIFER HYDRAULIC PROPERTIES 19
Well GV-1 Pumping Tests 20
Parameters Used for Model 22
OCCURRENCE AND MOVEMENT OF GROUNDWATER 23
DEPTH TO GROUNDWATER LEVEL 24
EXISTING WELLS AND CURRENT GROUNDWATER PUMPING 24
CHANGE IN GROUNDWATER LEVELS 25
COMMITTED DEMAND 26
GROUNDWATER QUALITY 27
COLORADO RIVER ACCOUNTING SURFACE 28
PROJECTED 100-YEAR WATER DEMAND **30**
PROJECTED 100-YEAR IMPACTS FROM GROUNDWATER PUMPING **31**
CONCEPTUAL MODEL 32
PROJECTION OF 100-YEAR GROUNDWATER LEVEL DRAWDOWN **34**
REFERENCES CITED **35**

TABLES

Table

1 WELL INVENTORY FOR SACRAMENTO VALLEY, MOHAVE COUNTY, ARIZONA

2 RESULTS FOR LABORATORY CHEMICAL ANALYSES FOR GROUNDWATER SAMPLES OBTAINED FROM GOLDEN VALLEY WELL GV-1, MOHAVE COUNTY, ARIZONA

CONTENTS – continued

ILLUSTRATIONS

Figure

1 LOCATION MAP FOR SACRAMENTO VALLEY

2 WATER LEVEL HYDROGRAPH FOR SELECTED WELLS IN SACRAMENTO VALLEY, MOHAVE COUNTY, ARIZONA

3 WATER LEVEL DRAWDOWN GRAPH FOR PUMPED WELL GV-1

4 WATER LEVEL RECOVERY GRAPH FOR PUMPED WELL GV-1

5 PROJECTED GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT GOLDEN VALLEY SOUTH

6 HYDROGRAPH OF GROUNDWATER LEVEL DRAWDOWN AT POINT OF MAXIMUM DRAWDOWN RESULTING FROM PUMPING 15,000 ACRE-FEET PER YEAR AT GOLDEN VALLEY SOUTH MASTER PLANNED COMMUNITY, MOHAVE COUNTY, ARIZONA

APPENDICES

Appendix

A WELL NUMBERING SYSTEM

B LITHOLOGIC DESCRIPTIONS FOR DRILL CUTTINGS SAMPLES FOR GOLDEN VALLEY WELL GV-1

C WATER QUALITY DATA, FOR SACRAMENTO VALLEY BASIN (FROM ADEQ OPEN FILE REPORT 01-04, JUNE 2001)

D THWELLS MODEL WELL LOCATIONS, AQUIFER PARAMETERS, PUMPING RATES, AND RESULTS

ERROL L. MONTGOMERY & ASSOCIATES, INC.

July 2005
REPORT

REGIONAL HYDROGEOLOGY, SOURCE OF WATER SUPPLY, AND PROJECTED 100-YEAR DRAWDOWN IMPACTS IN THE VICINITY OF THE GOLDEN VALLEY SOUTH MASTER PLANNED COMMUNITY MOHAVE COUNTY, ARIZONA

Prepared for:
RHODES HOMES – ARIZONA LLC

SUMMARY AND CONCLUSIONS

The following summary and conclusions are based on compilation and review of hydrogeologic data for the study area and development and testing of an analytical model. Projections of 100-year impacts from pumping to supply the proposed development at the Golden Valley South Master Planned Community (the "Property") indicate the availability of 15,000 acre-feet per year (AF/yr) of good quality groundwater, which exceeds the projected water demand for the proposed development.

1. The parcels comprising the proposed development at Golden Valley South are identified as the "Property", and are located in a northern part of Sacramento Valley known as Golden Valley. The Property includes approximately 5,800 acres south of State Highway 68, west of Interstate Highway 40, and north of U.S. Highway 66 **(Figure 1)**. The proposed development is shown on the preliminary plat in

Attachment 2 of the Application and includes presently undeveloped desert land located in parts of 9 sections of land south from Shinarump Road (Sections 2, 3, 4, 8, 9, 10, 11, 14, and 16, Township 20 North, Range 18 West), and a quarter section of land north from Shinarump Road (southwest quarter of Section 34, Township 21 North, Range 18 West). Title reports demonstrating property ownership are given in Attachment 4 of the Application.

2. The Sacramento basin is a graben developed between the major, gently east-dipping Mockingbird Mine fault on the west and the west-dipping Cerbat Mountains fault on the east. The basin is filled with a thick sequence of alluvial deposits of Tertiary to Quaternary age that overlies fractured granitic, metamorphic, and volcanic bedrock units, and is interbedded with younger volcanic rocks at some locations. The bedrock units form the basal and lateral boundaries of the basin and yield small quantities of groundwater to wells, except where abundantly fractured. The basin-fill alluvial deposits comprise the principal groundwater aquifer; thickness of these deposits ranges from a featheredge at the mountain fronts to possibly more than 4,000 feet in the north part of the basin. The volume of groundwater in storage in the principal Sacramento Valley aquifer system far exceeds the annual volume of recharge and discharge of groundwater in the basin.

3. The alluvial basin-fill deposits in Sacramento Valley have been divided into three major units: younger alluvium; intermediate alluvium; and older alluvium (Gillespie and Bentley, 1971). The older alluvium unit is the principal aquifer for virtually all of the existing production water wells in the non-bedrock areas of Sacramento

Valley. The lower part of the unit lies below groundwater table and reported yield to wells ranges from a few gallons per minute (gpm) to more than 2,000 gpm; most reported yields are small due chiefly to the pump capacity selected for domestic or stock use and are not representative for production capacity of the unit. At well GV-1 [B(21-18)34dba], located immediately north of the Property **(Figure 1)**, depth to non-pumping groundwater level in the older alluvium unit was about 765 feet below land surface (bls) and sustainable yield of the well exceeded the maximum capacity of the test pump, which was about 2,500 gpm. Well records and geophysical data for the basin demonstrate that the principal aquifer in Sacramento Valley is extensive, thick, and contiguous throughout most of the basin, and provides a good source of adequate groundwater supply to the proposed Rhodes Homes development. Data indicate that depth to bedrock and thickness of the older alluvium unit increase from east to west across the Property and are maximum near the west boundary of the Property.

4. Groundwater in the older alluvium unit in the north part of Sacramento Valley generally moves from north to south, as shown on **Figure 1**, in the same direction as ephemeral surface water flow in Sacramento Wash. Groundwater and surface water flow exits the basin to the Colorado River valley near Topock, Arizona; groundwater also leaves the basin by pumping from wells. Altitude of groundwater level in spring 1990 ranged from 1,800 feet above mean sea level (msl) north of State Highway 68 to 1,500 feet msl at Yucca (Rascona, 1991). Average hydraulic gradient of groundwater movement across the Property at that time was about 0.002, or 10.4 feet per mile. Altitude of groundwater level measured in the older

alluvium unit was about 1,794 feet msl in June 2005 at well GV-1. Results of drilling for well GV-1 suggest that unconfined aquifer conditions occur in the Property area.

5. The current average depth to groundwater at the Property is estimated to be about 755 feet bls. Therefore, it is assumed that the available groundwater level drawdown above the 1,200-foot Arizona Department of Water Resources (ADWR) water adequacy criterion is 445 feet.

6. Results of laboratory chemical analysis and measurements of field water quality parameters for depth-specific samples and a composite well head sample obtained from Rhodes Homes well GV-1 [B(21-18)34dba] are summarized in **Table 2**. Results indicate that, although elevated concentrations of arsenic were detected in the groundwater sample obtained in the depth interval from 1,160 to 1,180 feet bls during pilot borehole testing, chemical quality of the composite well head sample obtained from the completed well at the end of the 24-hour pumping test is excellent and meets all requirements for a new source of public water supply as defined by Arizona Department of Environmental Quality (ADEQ).

7. Records for 440 wells within the study area were compiled from the ADWR "55" well registry, "35" well registry, and Groundwater Site Inventory databases **(Table 1)**. Historic pumping from wells in the study area is poorly documented, except for the Griffith Energy power plant wells, public water supply wells for Valley Pioneer's Water Company and Golden Valley County Improvement District No. 1 (GVCID), and anecdotal information for past use of the Mineral Park

wells. Records are poor for pumping for other domestic, industrial, irrigation, stock, and other small capacity uses.

8. Based on the current groundwater withdrawals at the large production wells in the area versus past withdrawals, it was considered appropriate to add a simulated regional decline of 1 foot per year (ft/yr) to the projected drawdown impact for the model to represent future pumping from active wells in the area. This 1 ft/yr regional decline is designed to simulate both the ongoing current demand of the area and increased future pumpage for Pioneer's Valley Water Company for additional committed demand they will likely serve in the future. Many of the pre-platted lots in Golden Valley lie within the service area for Valley Pioneer's Water Company or GVCID.

9. According to the Golden Valley Area Plan (Mohave County, 2002), there are several areas of Golden Valley South that have pre-1965 platted subdivisions. The purpose and intent of the GVCID is to provide future water and road improvements to those subdivisions through their current designation of water adequacy. It is reasonable to assume that the current and committed demand within the area of Golden Valley 5800 parcel, owned by Rhodes Homes, is sufficiently simulated by a 1 ft/yr ongoing regional decline rate over 100 years.

10. Based on pumping test data for wells in the Property area, the geometric mean hydraulic conductivity for the principal aquifer is calculated to be about 100 gallons per day per square foot (gpd/ft^2). Based on data obtained for well GV-1 and on geophysical data for the Property area, average saturated thickness of the aquifer at the

Property area is estimated to be more than 750 feet. To provide a conservatively small estimate of saturated aquifer thickness for modeling purposes, a value of 550 feet was used. Based on this information, an average aquifer transmissivity of 55,000 gallons per day per foot width of aquifer (gpd/ft) was used to simulate impacts of pumping for the model.

11. Gillespie and Bentley (1971) estimated that specific yield of the principal aquifer in Sacramento Valley ranges from 0.05 to 0.10. Results of drilling for well GV-1 suggest that unconfined aquifer conditions occur in the Property area. Therefore, a specific yield of 0.07 was used to simulate impacts of proposed pumping at the Property for the model.

12. Projected water demands were estimated for the proposed development based on the projected number of residential units and acreages for other land uses identified by Rhodes Homes. Types of residential lots include only single family; residential water demands include interior and exterior uses. Other water demands include: interior and exterior demands for commercial property and schools, and landscaping demands for right-of-ways, easements, and parks. In addition, water demands for construction water and for lost and unaccounted for water were included. The projected total water demand following build out is estimated to be about 14,714 AF/yr.

13. Projections of 100-year drawdown resulting from estimated groundwater pumping for water supply at the Property were made using the computer software "THWELLS" (van der Heijde, 1996). Based on depth to bedrock contours, groundwater level contours,

regional gravity survey data, and records for wells in the basin, two hydrologic barrier boundaries were simulated to represent the basin bounding faults along the east and west margins of the basin floor **(Figures 1 and 5)**. In addition, although available data do not support the existence of a hydrologic barrier boundary between the Sacramento and Detrital Valleys, such a boundary was added to the model to address concerns voiced by ADWR staff at a preliminary project meeting held on June 7, 2005.

14. **Table D-1 and Figure 5** show the simulated drawdown caused solely by the proposed pumping at the property; the regional groundwater level decline of 1 ft/yr (100 feet over 100 years of pumping) must be added to the drawdown shown. Maximum simulated groundwater level drawdown from all sources of pumping, including the regional groundwater level decline, is about 399 feet at Pumping Well 5 **(Table D-1)**, which is the sum of the simulated drawdown due to pumping at the property (299 feet) plus 100 feet of regional groundwater level decline. Therefore, the resulting maximum depth to water after 100 years at Pumping Well 5 is projected to be about 1,154 feet bls, which is the average current depth to groundwater at the Property of 755 feet bls plus the simulated drawdown of 399 feet.

15. Projected 100-year impacts of pumping for water supply for the proposed development indicate that less than 300 feet of additional drawdown will be required to meet the needs of the development, and sufficient groundwater is available to serve the development and meet all ADWR requirements.

ERROL L. MONTGOMERY & ASSOCIATES, INC.

July 2005
REPORT

REGIONAL HYDROGEOLOGY, SOURCE OF WATER SUPPLY, AND PROJECTED 100-YEAR DRAWDOWN IMPACTS IN THE VICINITY OF THE GOLDEN VALLEY SOUTH MASTER PLANNED COMMUNITY MOHAVE COUNTY, ARIZONA

Prepared for:
RHODES HOMES – ARIZONA LLC

INTRODUCTION

On behalf of RHODES HOMES – ARIZONA LLC ("Rhodes Homes"), Errol L. Montgomery & Associates, Inc. (M&A) has prepared this report to document results of review and analysis of hydrogeologic information for the vicinity of the proposed development identified as the Golden Valley South Master Planned Community in Mohave County, Arizona. The proposed development is referred to as the Rhodes Golden Valley 5800 site in some previous documents. The purpose of this review and analysis is to evaluate the potential for development of a 100-year groundwater supply to serve the proposed Golden Valley South development. This report includes a summary of available hydrogeologic data, calculation of water demands for the development based on projected land-use information provided by Rhodes Homes, development of an analytical model for the study area, and use of the model to project impacts of groundwater pumping for the 100-year water supply for the

proposed development. This report comprises Attachment 5 of the Application for Analysis of Water Adequacy being submitted to Arizona Department of Water Resources (ADWR).

DESCRIPTION OF STUDY AREA

The study area is located in the Mohave Desert, which is a transitional area separating the Great Basin Desert to the north and the Sonoran Desert to the south (Rascona, 1991). **Figure 1** is a location map for the study area. The parcels comprising the proposed Golden Valley South Master Planned Community are identified as the "Property", and are located in a northern part of Sacramento Valley known as Golden Valley. The Property includes approximately 5,800 acres (Stanley Consultants Inc., 2005) south of State Highway 68, west of Interstate Highway 40, and north of U.S. Highway 66 **(Figure 1)**. Title reports demonstrating property ownership are given in Attachment 4 of the Application.

The proposed development is shown on the preliminary plat in Attachment 2 of the Application and includes presently undeveloped desert land located in parts of 9 sections of land south from Shinarump Road (Sections 2, 3, 4, 8, 9, 10, 11, 14, and 16, Township 20 North, Range 18 West), and a quarter section of land north from Shinarump Road (southwest quarter of Section 34, Township 21 North, Range 18 West). This report describes water demands and impacts from development of the parcels currently owned by Rhodes Homes. Hydrogeologic conditions are summarized for the area shown on **Figure 1**, which is defined by the basin boundary on the north, east, and west, and by an arbitrary east-west boundary located south from Yucca, Arizona, approximately coinciding with the south boundary of Township 17 North. The study area comprises the entire northern part of Sacramento Valley.

HYDROGEOLOGIC CONDITIONS

Sacramento Valley has a semi-arid climate characterized by hot summers and mild winters; average annual precipitation ranges from about 7.6 inches at Yucca, in the south part of the study area, to about 10.5 inches at Kingman, northeast from the Property (Western Regional Climate Center, 2005). Streams in Sacramento Valley are generally ephemeral and flow only in direct response to storm water runoff events; therefore, groundwater is the only reliable source of water. The valley floor in the north part of Sacramento Valley consists of gently sloping, coalescing alluvial fans that extend from the mountain fronts on the west and east margins of the elongate basin and meet along the Sacramento Wash channel, which flows south through the basin and is tributary to the Colorado River. Sacramento Wash flows along the west boundary of the Property. The valley floor in the north part of Sacramento Valley slopes southward from an altitude of about 3,420 feet above mean sea level (msl) at the topographic divide with Detrital Valley about 1.5 miles southwest from Grasshopper Junction to about 1,700 feet msl near Yucca, Arizona. Maximum altitudes in the basin range from 5,216 feet msl near Mount Nutt in the Black Mountains on the west to 8,417 feet msl at Hualapai Peak in the Hualapai Mountains on the east. Groundwater and surface water flow exits the basin to the Colorado River valley near Topock, Arizona; altitude of land surface at Topock is about 460 feet msl. Groundwater also leaves the basin by pumping from wells.

A literature search was conducted to obtain published reports for the area that contain relevant hydrogeologic information. Sources of hydrogeologic information used for this study include publications and data files of the U.S. Geological Survey (USGS), ADWR, the Arizona Geological Survey, the Nevada Bureau of Mines and Geology, the Utah Geological Association, universities, and

private consultants. In addition, production water well GV-1 (ADWR registration number 55-901789) was constructed and tested for Rhodes Homes one-half mile north of the Property at state cadastral location (B-21-18)34dba. Data obtained from these sources include: 1) well construction details; 2) reported well pumping rates; 3) groundwater level data; 4) groundwater quality data; 5) lithologic, physical, and structural characteristics for geologic units; and 6) aquifer parameters and pumping test data.

An inventory of well records for the study area shown on **Figure 1** is given in **Table 1**. To focus on the aquifers in the study area that are important to water supply for the Property, **Table 1 and Figure 1** exclude wells located in the bedrock areas shown on **Figure 1**. The well numbering system for the State of Arizona is described in **Appendix A**. A lithologic log for new production water well GV-1 is given in **Appendix B**.

PREVIOUS INVESTIGATIONS

Literature reviewed and used for preparation of this summary hydrogeologic report is listed in the References Cited section. Previous investigations by Richard and others (2000) document geology of the mountain ranges that bound the groundwater basin in which the Property lies. Data for the groundwater system and hydrogeologic conditions beneath the floor of Sacramento Valley are available from results of drilling and testing selected wells in the basin. For the Property area, lithologic logs and pumping test results are available for deep wells constructed for the Mineral Park mining operations (Gillespie and Bentley, 1971), Golden Valley County Improvement District (GVCID) No. 1 (Manera, Inc., 1991), Griffith Energy, L.L.C. (Manera, Inc., 1999), and Rhodes Homes (this report). Gillespie and

others (1966), Gillespie and Bentley (1971), and Rascona (1991) provide groundwater basic data and analyses of the hydrogeologic system in the Property area.

A key aspect of the hydrogeologic conditions in Sacramento Valley is the complex structural geology of the region, which affects the geometry, boundaries, and lithology of the groundwater aquifers. Numerous studies have been published for the geologic evolution of the northern Colorado River extensional corridor in northwest Arizona and southern Nevada and the transition from the Colorado Plateau to the Basin and Range Physiographic Province. Faulds and others (2001) provide a particularly useful compilation and synthesis of the regional structural and geologic conditions that affect the Sacramento Valley groundwater system.

GEOLOGIC CONDITIONS

The Property is located in the north-central part of an elongate structural basin bounded on the east by the north-northwest-trending Cerbat Mountains and Hualapai Mountains, and on the west by the north-northwest-trending Black Mountains **(Figure 1)**. The Sacramento groundwater basin is further bounded on the north by a groundwater and surface water divide with Detrital Valley and on the south by the Mohave and McCracken Mountains. South of the study area, the northern and southern parts of Sacramento Valley coalesce and both surface water and groundwater exit the basin westward toward the Colorado River near Topock, Arizona. The entire basin is about 70 miles long from north to south and is an average of about 20 miles wide from east to west; total area of the basin is about 1,500 square miles (Rascona, 1991). The study area is underlain by Quaternary and Tertiary alluvial sediments that were deposited in the structural basin, which

encompasses the main part of Sacramento Valley. Extent of the alluvial basin is generally defined by fault-block mountain ranges, characteristic of the Basin-and-Range physiographic province.

The mountain ranges are composed chiefly of uplifted Precambrian metamorphic and igneous rocks that have been intruded by younger igneous rocks. The Cerbat Mountains to the northeast and the Hualapai Mountains to the east are composed primarily of Precambrian granitic igneous rocks and gneiss with some schist (Gillespie and Bentley, 1971). The Black Mountains to the west are composed primarily of Tertiary, and Cretaceous (?) and Tertiary volcanic rocks with some Precambrian metamorphic rocks (Gillespie and Bentley, 1971). The older volcanic rocks consist of a thick sequence of andesite and latite flows and tuff beds, and form the main mass of the Black Mountains (Gillespie and Bentley, 1971). The younger volcanic rocks consist of basalt flows, basaltic andesite flows and tuff, and rhyolite tuff and ignimbrites; these rocks crop out over large areas near Kingman, where they are the principal aquifer for the Kingman well field, and in the Black Mountains (Gillespie and Bentley, 1971). The younger volcanic rocks are interbedded with the older alluvium in the basin-fill deposits. The mountain ranges and alluvial basin are associated with a complex structural history of extensional faulting that occurred chiefly between 15 and 6 million years ago (Anderson and others, 1992).

The Sacramento Valley groundwater basin is filled with a thick sequence of alluvial deposits of Tertiary to Quaternary age that overlies fractured granitic, metamorphic, and volcanic bedrock units, and is interbedded with younger volcanic rocks at some locations. The bedrock units form the basal and lateral boundaries of the basin and yield small quantities of groundwater to wells, except where abundantly fractured. The basin-fill alluvial deposits comprise the principal groundwater aquifer; thickness of these deposits ranges from a featheredge at the

mountain fronts to possibly more than 4,000 feet in the north part of the basin (Gillespie and Bentley, 1971). Depth to bedrock contours, as defined by Oppenheimer and Sumner (1980), are shown on **Figure 1** for the north part of the basin. The alluvial basin-fill deposits in Sacramento Valley have been divided into three major units: younger alluvium; intermediate alluvium; and older alluvium (Gillespie and Bentley, 1971).

Younger Alluvium

The younger alluvium of Holocene age consists of unconsolidated gravel, sand, silt, and clay deposited on alluvial slopes and flood plains and in stream channels (Wilson and Owen-Joyce, 1994). The deposits chiefly contain fragments of granite, schist, gneiss, and volcanic rocks and range in thickness from a few feet to as much as 50 feet (Gillespie and Bentley, 1971). Where penetrated by well GV-1 near the Property **(Figure 1)**, the lithologic log suggests that younger alluvium may have been penetrated from land surface to a depth of 40 feet below land surface (bls) based on grain size distribution **(Appendix B)**. This unit is important for conveying recharge of storm water runoff to deeper units along stream channels, but generally is not important as a source of groundwater for wells in Sacramento Valley, except where it may be saturated in mountain stream channels.

Intermediate Alluvium

The intermediate alluvium may be of Pleistocene and Tertiary age and is an extensive near-surface deposit underlying the valley floor (Gillespie and Bentley, 1971). The deposits chiefly contain weakly to moderately consolidated fragments of granite, schist, gneiss, and volcanic rocks and range in thickness from 200 to 500

feet (Gillespie and Bentley, 1971). Where penetrated by well GV-1 near the Property **(Figure 1)**, the lithologic log suggests that the intermediate alluvium may have been penetrated from 40 to 400 feet bls based on grain size distribution and lithification **(Appendix B)**. This unit is important for conveying recharge of storm water runoff to deeper units along stream channels and mountain fronts, but occurs chiefly above the groundwater table and, therefore, is generally not important as a source of groundwater for wells in Sacramento Valley.

Older Alluvium

The older alluvium of Tertiary age was deposited in alluvial fans that extend from the surrounding mountain ranges into the valley floor and consists of weakly to moderately consolidated gravel, sand, silt, and clay (Wilson and Owen-Joyce, 1994). The mineralogy and rock type of the older alluvium sands and gravels are representative of the source rocks in the surrounding mountains that have shed into the basin by erosive processes. Where penetrated by well GV-1 near the Property, this unit consists chiefly of gravel, sand, and clay interbedded with lava flow rock and some tuff **(Appendix B)**.

Granitic bedrock was encountered in well GV-1 at a depth of 1,550 feet bls; therefore, if the upper contact of the unit is at 400 feet bls, thickness of the unit is 1,150 feet at well GV-1. Geophysical data indicate that depth to bedrock and thickness of the unit increases from east to west across the Property (Gillespie and Bentley, 1971; Oppenheimer and Sumner, 1980). Depth to bedrock at well GV-1 (1,550 feet bls) is about one-half the depth projected by Oppenheimer and Sumner (1980) (nearly 3,200 feet bls) **(Figure 1)**; however, data for other deep wells, such as the Christmas Tree wells by Santa Claus [well (B-22-18)4bbb with total depth of 2,510 feet bls and well (B-22-18)5dac with total depth of 2,437 feet bls **(Table 1)**] are consistent with the depth to bedrock contours of Oppenheimer and Sumner (1980).

A seismic refraction survey was conducted under USGS direction to measure thickness of the basin-fill alluvium along an east-west profile at the south boundary of the Property (Gillespie and Bentley, 1971). The USGS interpreted results of this survey to indicate that depth to bedrock increases from the east and west margins of the basin floor to a maximum depth of 4,400 feet bls about 1 mile due south of the westernmost boundary of the Property at the southwest corner of Section 8, Township 20 North, Range 18 West (Gillespie and Bentley, 1971). Depth to bedrock interpreted by USGS where well GV-1 is projected south orthogonally to the seismic profile is about 1,650 feet bls, which correlates well with the depth to bedrock at well GV-1 (1,550 feet bls). These relations indicate that depth to bedrock and thickness of the older alluvium unit increase from east to west across the Property and are maximum near the west boundary of the Property, as shown on **Figure 1**.

The older alluvium unit is the principal aquifer for virtually all of the existing production water wells in the non-bedrock areas of Sacramento Valley. The lower part of the unit lies below groundwater table and reported yield to wells ranges from a few gallons per minute (gpm) to more than 2,000 gpm **(Table 1)**; most reported yields are small due chiefly to the pump capacity selected for domestic or stock use and are not representative for production capacity of the unit. At well GV-1, located immediately north from the Property **(Figure 1)**, depth to non-pumping groundwater level in the older alluvium unit was about 765 feet bls and sustainable yield of the well exceeded the maximum capacity of the test pump, which was about 2,500 gpm.

GEOLOGIC STRUCTURAL FEATURES

Sacramento Valley lies in the northern Colorado River extensional corridor and the transition area from the Colorado Plateau to the Basin and Range

Physiographic Province. Extreme Cenozoic structural extension occurred in this region and was accompanied by extensive systems of high and low angle normal faults, listric normal faults, thrust faults, detachment faults, and strike-slip faults. The structural features of Sacramento Valley are classified in the Whipple domain, which comprises a system of east-dipping normal faults and west-tilted fault blocks (Faulds and others, 2001). This structural system is believed to be associated with abundant fracturing of bedrock and overlying lithified rock units.

The Sacramento basin is a graben developed between the major, gently east-dipping Mockingbird Mine fault on the west and the west-dipping Cerbat Mountains fault on the east (Faulds and others, 2001). These faults are associated with the model boundaries described later in this report.

Inspection of residual Bouguer anomaly gravity data for Sacramento Valley indicates that the low-gravity structural trough that is the basin graben extends north and south from the Rhodes Homes Property. These data, together with other well data and geophysical data for the basin, demonstrate that the principal aquifer in Sacramento Valley is extensive, thick, and contiguous throughout most of the basin, and provides a good source of adequate groundwater supply to the proposed Rhodes Homes development.

ADWR has raised the concern that an aquifer boundary may occur at the surface water divide between Sacramento and Detrital Valleys. The deep wells nearest to that area are the Christmas Tree wells near the town of Santa Claus **(Table 1; Figure 1)**, and include: Christmas Tree well no. 2 [(B-23-18)33cbc2], with a total depth of 2,132 feet bls and depth to water of 1,236 feet bls; Christmas Tree well no. 3 [(B-22-18)4bbb], with a total depth of 2,510 feet bls and depth to water of 1,207 feet bls; and Christmas Tree well no. 4 [(B-22-18)5dac], with a total depth of 2,437 feet bls and depth to water of 1,194 feet bls. The logs for these wells indicate

that bedrock was not encountered; these wells are within 4 miles of the surface water divide **(Figure 1)**. These data indicate there is a substantial saturated thickness of the principal aquifer near the divide and, in the absence of any recognized major fault crossing the basin between the wells and the divide, suggest that an aquifer boundary does not occur between the two basins.

AQUIFER HYDRAULIC PROPERTIES

Important aquifer hydraulic properties that control rate of groundwater movement and amount of groundwater storage in the aquifer include transmissivity, hydraulic conductivity, and specific yield or storage coefficient. Transmissivity is defined as the rate of groundwater movement under a 1:1 hydraulic gradient through a vertical section of an aquifer 1 foot wide and extending the full saturated thickness of the aquifer (Theis, 1935). Units for transmissivity are gallons per day per foot width of aquifer (gpd/ft). Transmissivity is a measure of the ability of an aquifer to transmit groundwater and is equal to the product of hydraulic conductivity and saturated thickness of the aquifer. Hydraulic conductivity is defined as the rate of groundwater movement, under a 1:1 hydraulic gradient, through a unit area of aquifer material (Heath, 1989). Hydraulic conductivity has units of gallons per day per square foot (gpd/ft^2). Hydraulic conductivity is also commonly expressed in units of feet per day (ft/day), which is gpd/ft^2 divided by 7.48 gallons per cubic foot. Specific yield is defined as the volume of water that would drain from a unit volume of aquifer material and is dimensionless; this term is applied to unconfined aquifers. Storage coefficient is defined as the volume of water released from storage in a unit prism of an aquifer when the hydraulic head is lowered a unit distance; this term is applied to confined aquifers (Heath, 1989).

A search of ADWR records, USGS publications, and consultants reports yielded little pumping test information for wells in the Sacramento Valley groundwater basin. However, the available data are for wells located at or near the Rhodes Homes Property. Construction details for wells in the ADWR well records for Sacramento are summarized in **Table 1**. In addition, a pumping test was conducted by M&A for the principal aquifer at new production water well GV-1, located immediately north from the Property **(Figure 1)**.

Well GV-1 Pumping Tests

From June 2 to June 12, 2005, a step-rate pumping test and a constant-rate aquifer test were conducted at well GV-1. During the tests, the following parameters were monitored: depth to water level; instantaneous discharge rate; total volume of groundwater pumped; discharge pressure; and water quality parameters. Discharge rate was monitored using a mechanical flow meter and an orifice plate and manometer. Depth to groundwater level in the pumped well was monitored using both an electronic transducer connected to a datalogger and an electric water level sounder. Depth to groundwater level monitored using the transducer was calibrated using an electrical sounder before and after testing operations. Drawdown measured using the transducers was generally the same as drawdown measured using the sounder. Transmissivity was calculated from aquifer test results using the Cooper-Jacob graphical method (Cooper and Jacob, 1946).

On June 2 and 9, 2005, a step-rate pumping test was conducted at well GV-1 to select a sustainable pumping rate for the subsequent 24-hour constant-rate aquifer test and to evaluate well efficiency. During the step-rate test, the well was pumped for five periods (steps) of 120 minutes. During each step, a constant discharge rate was maintained. However, near the end of the third step conducted on June 2, pumping was stopped at the request of Mohave County until a culvert

could be installed where the discharge water crossed Shinarump Road. The step test was resumed on June 9 after the culvert was installed and the third step was repeated. Discharge rate was increased for each subsequent step. At the end of the step-rate test, the pump was shut off and groundwater level was allowed to recover before conducting the aquifer test.

On June 10, 2005, a constant-rate aquifer test was conducted at well GV-1. Duration of the pumping period was 24 hours. A nearly constant discharge rate of about 2,020 gpm was maintained for the entire pumping period. All measurements for discharge rate were within 2 percent of the average pumping rate of 2,020 gpm. The pumping period was followed by a 24-hour recovery period. Results of the aquifer test are shown in **Figures 3 and 4**.

Pre-pumping depth to groundwater level was about 765 feet bls. Initial groundwater level drawdown was very rapid due to removal of water from wellbore storage. Subsequently, depth to groundwater level changed very slowly. Maximum drawdown after 24 hours of pumping was about 112 feet. Specific capacity was 18 gpm/ft after 24 hours of pumping.

Transmissivity calculated using the aquifer test data ranged from 200,000 gpd/ft for the pumping period to 700,000 gpd/ft for the recovery period. The transmissivity calculated for the recovery period is not affected by well efficiency or borehole "skin effects" due to non-laminar flow near the wellbore and, therefore, is considered to be more representative for the principal aquifer at the GV-1 location. However, to provide conservative modeling results for impact of pumping at the Property, the transmissivity calculated for the pumping period was used for estimating an average transmissivity for the basin.

Parameters Used for Model

Available data for aquifer hydraulic parameters reported for pumping tests conducted for the principal aquifer in the north part of Sacramento Valley are summarized as follows:

WELL IDENTIFIER	WELL NAME	TEST DATE	TRANSMISSIVITY (gpd/ft)	AVERAGE HYDRAULIC CONDUCTIVITY (gpd/ft^2)	REFERENCE
B(20-18)4 bbb	MP-5	Pre-1971	46,000	70	Gillespie and Bentley (1971)
B(21-18)32 dcc	MP-1	Pre-1971	35,000	70	Gillespie and Bentley (1971)
(B-21-18) 34dba	GV-1	2005	200,000	435	Montgomery & Associates
(B-19-18) 10cdd	#1	1999	76,000	115	Manera, Inc. (1999)
(B-21-19) 13ddd	GVCID-1 #1	1991	17,000	42	Manera, Inc. (1991)
(B-21-19) 25aaa	GVCID-1 #2	1991	37,000	106	Manera, Inc. (1991)

Based on these data, the geometric mean hydraulic conductivity is about 100 gpd/ft^2. Based on data obtained for well GV-1 and on geophysical data for the Property area, average saturated thickness of the aquifer at the Property area is estimated to be more than 750 feet. To provide a conservatively small estimate of saturated aquifer thickness for modeling purposes, a value of 550 feet was used. Based on this information, an average aquifer transmissivity of 55,000 gpd/ft was used to simulate impacts of pumping for the model.

Gillespie and Bentley (1971) estimated that specific yield of the principal aquifer in Sacramento Valley ranges from 0.05 to 0.10. Results of drilling for well GV-1 suggest that unconfined aquifer conditions occur in the Property area.

Therefore, a specific yield of 0.07 was used to simulate impacts of proposed pumping at the Property for the model.

OCCURRENCE AND MOVEMENT OF GROUNDWATER

Groundwater in the older alluvium unit in the north part of Sacramento Valley generally moves from north to south, as shown on **Figure 1**, in the same direction as ephemeral surface water flow in Sacramento Wash (Rascona, 1991). Altitude of groundwater level in spring 1990 ranged from 1,800 feet msl north of State Highway 68 to 1,500 feet msl at Yucca (Rascona, 1991). Average hydraulic gradient of groundwater movement across the Property at that time was about 0.002, or 10.4 feet per mile. Altitude of groundwater level measured in the older alluvium unit was about 1,794 feet msl in June 2005 at well GV-1 [(B-21-18)34dba], located immediately north of the Property **(Table 1)**.

The volume of groundwater in storage in the principal Sacramento Valley aquifer system far exceeds the annual volume of recharge and discharge of groundwater in the basin. Estimates for groundwater in storage and for recharge to the aquifer have been reported by several authors and range widely. These topics are not addressed herein because it is assumed that no recharge occurs for projections of drawdown impact from proposed pumping at the Rhodes Homes Property. This assumption is commonly made for water adequacy studies to provide conservatively large projections of impact.

DEPTH TO GROUNDWATER LEVEL

In November 1995, depth to groundwater in the principal aquifer in Sacramento Valley ranged from about 300 feet bls at Yucca [(B-17-18)12bca] in the south part of the basin to about 1,235 feet bls near Santa Claus [(B-23-18)33cbc2] in the north part of the basin **(Table 1)**.

Depth to groundwater in the principal aquifer in June 2005 at well GV-1 [(B-21-18)34dba], located immediately north of the Property, was 765 feet bls **(Table 1)**. Depth to groundwater in August 2004 at well (B-20-18)22aac, located immediately south of the Property, was about 744 feet bls. The current average depth to groundwater at the Property is estimated to be about 755 feet bls. Therefore, it is assumed that the available groundwater level drawdown above the 1,200-foot ADWR water adequacy criterion is 445 feet.

EXISTING WELLS AND CURRENT GROUNDWATER PUMPING

Records for 440 wells within the study area were compiled from the ADWR "55" well registry, "35" well registry, and Groundwater Site Inventory databases, and are summarized in **Table 1**. Wells within the study area are shown on **Figure 1**.

Reported pumping rates for wells in the Property area range from a few gpm to more than 2,000 gpm **(Table 1)**. Historic pumping from wells in the study area is poorly documented, except for the Griffith Energy power plant wells, public water supply wells for Valley Pioneer's Water Company and Golden Valley County Improvement District No. 1 (GVCID), and anecdotal information for past use of the

Mineral Park wells. Records are poor for pumping for other domestic, industrial, irrigation, stock, and other small capacity uses.

CHANGE IN GROUNDWATER LEVELS

A hydrograph of groundwater level altitude for selected wells across the north part of Sacramento Valley is shown on **Figure 2**. Groundwater levels during the last 40 years have not changed substantially for wells near or at the Property. Prior to 1990, groundwater pumped from the Duval/Cypress production wells to supply the Mineral Park Mine operations comprised the majority of groundwater withdrawals from the basin. After 1990, these wells were transferred to Valley Pioneer's Water Company and are presently used at a fraction of the rate used for the mine.

Three wells shown on **Figure 2** that are pertinent for evaluating rate of groundwater level change at the Property are:

1. well (B-20-18)22aac, located immediately south of the Property **(Figure 1)**;
2. Mineral Park Well No. 5 [(B-20-18)4bbb], located in the north part of the Property; and
3. Mineral Park Well No. 2 [(B-21-18)30abb], located about 3 miles northwest of the Property.

From 1965 to 1990, average rate of groundwater level ***decline*** was 0.29 feet per year (ft/yr) at well (B-20-18)22aac, 0.51 ft/yr at well (B-20-18)4bbb, and 1.15 ft/yr at well (B-21-18)30abb. From 1990 to 1995, average rate of groundwater level ***rise***

was 0.06 feet per year (ft/yr) at well (B-20-18)22aac, 0.20 ft/yr at well (B-20-18)4bbb, and 3.16 ft/yr at well (B-21-18)30abb.

Based on the current groundwater withdrawals at the large production wells in the area versus past withdrawals, it was considered appropriate to add a simulated regional decline of 1 ft/yr to the projected drawdown impact for the model to represent future pumping from active wells in the area. This 1 ft/yr regional decline is designed to simulate both the ongoing current demand of the area and increased future pumpage for Pioneer's Valley Water Company for additional committed demand they will likely serve in the future. Many of the pre-platted lots in Golden Valley lie within the service area for Valley Pioneer's Water Company or GVCID.

COMMITTED DEMAND

According to the Golden Valley Area Plan (Mohave County, 2002), there are several areas of Golden Valley South that have pre-1965 platted subdivisions. The purpose and intent of the GVCID is to provide future water and road improvements to those subdivisions through their current designation of water adequacy. It is reasonable to assume that the current and committed demand within the area of Golden Valley 5800 parcel, owned by Rhodes Homes, is sufficiently simulated by a 1 ft/yr ongoing regional decline rate over 100 years.

GROUNDWATER QUALITY

Data obtained from the Arizona Department of Environmental Quality (ADEQ) 1999 baseline study of ambient groundwater quality in the Sacramento Valley basin (ADEQ, 2001) are summarized in **Appendix C**. Results indicate that groundwater quality in the central parts of the basin generally meets U.S. Environmental Protection Agency (EPA) primary maximum contaminant levels (MCLs) for drinking water (EPA, 2002). Groundwater samples from selected wells at the margins of the basin have been found to contain elevated concentrations of nitrate, gross alpha, fluoride, and/or total dissolved solids.

Results of laboratory chemical analysis and measurements of field water quality parameters for depth-specific samples and a composite well head sample obtained from Rhodes Homes well GV-1 [B(21-18)34dba] are summarized in **Table 2**. Results indicate that, although elevated concentrations of arsenic were detected in the groundwater sample obtained in the depth interval from 1,160 to 1,180 feet bls during pilot borehole testing, chemical quality of the composite well head sample obtained from the completed well at the end of the 24-hour pumping test is excellent and meets all requirements for a new source of public water supply as defined by ADEQ.

A search of Internet on-line data files for locations of WQARF and Superfund sites designated by ADEQ did not indicate the presence of contaminant sites in the study area.

COLORADO RIVER ACCOUNTING SURFACE

Wilson and Owen-Joyce (1994, p. v) define the "accounting surface" that is administered by the U.S. Bureau of Reclamation for the Colorado River corridor as follows:

> "The accounting surface represents the elevation and slope of the unconfined static water table in the river aquifer outside the flood plain and the reservoirs of the Colorado River that would exist if the river were the only source of water to the river aquifer. The accounting surface was generated by using profiles of the Colorado River and water-surface elevations of reservoirs, lakes, marshes, and drainage ditches."

Further, Wilson and Owen-Joyce (1994, p. 6) establishes the following criteria to determine if wells impact the Colorado River subflow:

> **Wells that impact the river subflow:** "Wells that have a static water-level elevation equal to or below the accounting surface are presumed to yield water that will be replaced by water from the river."
>
> **Wells that do not impact the river subflow:** "Wells that have a static water-level elevation above the accounting surface are presumed to yield water that will be replaced by water from precipitation and inflow from tributary valleys."

There are several factors that ensure production wells for the proposed Rhodes Homes development will not impact the river subflow by these criteria. The Property lies outside the accounting surface for Sacramento Valley. In addition, altitude of the groundwater table in the older alluvium unit measured in wells **(Table 1)** at or near the Property are more than 1,200 feet above the accounting surface, as demonstrated below:

CADASTRAL LOCATION	WELL NAME	WELL DEPTH (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	GROUNDWATER LEVEL			ACCOUNT -ING SURFACE ALTITUDE (feet, msl)	FEET ABOVE ACCOUNT -ING SURFACE
				DATE MEASURED	DEPTH (feet, bls)	ALTITUDE (feet, msl)		
(B-20-18) 22aac	---	779	2,495	8/18/2004	743.9	1,751	455	1,296
(B-20-18) 4bbb	MP-5	1,350	2,524	11/9/1995	748.6	1,775	455	1,320
(B-21-18) 34dba	GV-1	1,320	2,559	6/10/2005	764.71	1,794	455	1,339

Lastly, in order to obtain a statement of adequate water supply from ADWR, a development can not draw down the water level in the aquifer below a depth of 1,200 feet without a variance. The accounting surface is more than 2,000 feet below land surface at the Property. Therefore, wells used to withdraw groundwater under an ADWR statement of adequate water supply for the proposed development are not wells that would impact the Colorado River, according to criteria established by Wilson and Owen-Joyce (1994).

PROJECTED 100-YEAR WATER DEMAND

Projected water demands were estimated for the proposed development based on the projected number of residential units and acreages for other land uses identified by Rhodes Homes. Types of residential lots include only single family; residential water demands include interior and exterior uses. Other water demands include: interior and exterior demands for commercial property and schools, and landscaping demands for right-of-ways, easements, and parks. In addition, water demands for construction water and for lost and unaccounted for water were included. The projected total water demand following build out is estimated to be about 14,714 acre-feet per year (AF/yr). Details for the basis of the estimated water demand are included in Attachment 1 of the Application for Analysis of Adequate Water Supply.

PROJECTED 100-YEAR IMPACTS FROM GROUNDWATER PUMPING

Projections of 100-year drawdown resulting from estimated groundwater pumping for water supply at the Property were made using the computer software "THWELLS" (van der Heijde, 1996). This software solves the Theis equation to compute drawdown for up to 100 wells and uses spatially uniform values for aquifer parameters. A correction to the Theis equation was applied for simulation of unconfined aquifer conditions. Data used in the THWELLS model are discussed below and are summarized in tabular form in **Appendix D**. **Table D-1** gives the "x" and "y" model coordinates for pumping wells and image wells, and the pumping rate simulated at each well location. Locations for wells included in the simulation are shown on **Figure 5**; the well locations represent sites for pumping wells in the target aquifer system and sites for image wells representing the effects of assumed hydrologic barrier boundaries.

Based on data obtained for well GV-1 and on geophysical data for the Property area, average saturated thickness of the aquifer at the Property area is estimated to be more than 750 feet. To provide a conservatively small estimate of saturated aquifer thickness for modeling purposes, a value of 550 feet was used.

Model transmissivity was assigned a value of 55,000 gpd/ft to represent an average value for the study area for the 100-year projection. The 55,000 gpd/ft value is the product of the conservatively small average saturated aquifer thickness assigned for the Property and the geometric mean of hydraulic conductivities calculated from pumping test data for the Property area (100 gpd/ft^2).

Based on depth to bedrock contours, groundwater level contours, regional gravity survey data, and records for wells in the basin, two hydrologic barrier

boundaries were simulated to represent the basin bounding faults along the east and west margins of the basin floor **(Figures 1 and 5)**. In addition, although available data do not support the existence of a hydrologic barrier boundary between the Sacramento and Detrital Valleys, such a boundary was added to the model to address concerns voiced by ADWR staff at a preliminary project meeting held on June 7, 2005.

The current average depth to groundwater at the Property is estimated to be about 755 feet bls. Therefore, it is assumed that the available groundwater level drawdown above the 1,200-foot ADWR water adequacy criterion is 445 feet.

Based on the current groundwater withdrawals at the large production wells in the area versus past withdrawals and change in groundwater levels over the last 40 years, it was considered appropriate to add a simulated regional decline of 1 ft/yr to the projected drawdown impact for the model to represent future pumping from active wells in the area.

CONCEPTUAL MODEL

The hydrologic features and pumping regimens for the conceptual groundwater model are summarized as follows:

- Barrier boundaries were assumed to be located east, west, and north from the Property, representing barriers to groundwater flow along the Black Mountains on the west, the Cerbat and Hualapai Mountains on the east, and a bedrock high hypothesized by ADWR at the surface water divide between the Sacramento and Detrital Valleys. These boundaries define an elongated triangle encompassing the Property

area. Locations for the barrier boundaries are shown on **Figures 1 and 5**.

- Image wells were simulated on the opposite side of each barrier boundary.
- Saturated thickness of the aquifer was assumed to be 550 feet.
- Aquifer parameters: Transmissivity (T) = 55,000 gpd/ft
  Specific Yield (S_y) = 0.07
- 10 pumping wells were simulated on the Property; each well was assigned a continuous pumping rate of 930 gpm for a total demand of 15,000 AF/yr **(Figure 5; Table D-1 in Appendix D).**
- 30 image wells were simulated in the model, and were each assigned a pumping rate of 930 gpm to represent production pumping effects **(Figure 5; Table D-1 in Appendix D).**
- Total simulation time = 100 years
- A total of 100 feet of additional drawdown was added to model results to simulate a regional decline of 1 ft/yr.

PROJECTION OF 100-YEAR GROUNDWATER LEVEL DRAWDOWN

Results of model projections for a 100-year pumping period and a total pumping rate of 15,000 AF/yr are summarized as follows:

- Simulations were conducted to project groundwater level drawdown for 100 years of pumping. Three barrier boundaries were simulated. Recharge was not included in the model projection.

- Simulations were conducted for a 100-year period. Pumping rates were based on projected future pumping rates.

- **Table D-1 and Figure 5** show the simulated drawdown caused solely by the proposed pumping at the property; the regional groundwater level decline of 1 ft/yr (100 feet over 100 years of pumping) must be added to the drawdown shown. Maximum simulated groundwater level drawdown from all sources of pumping, including the regional groundwater level decline, is about 399 feet at Pumping Well 5 **(Table D-1)**, which is the sum of the simulated drawdown due to pumping at the property (299 feet) plus 100 feet of regional groundwater level decline. Therefore, the resulting maximum depth to water after 100 years at Pumping Well 5 is projected to be about 1,154 feet bls, which is the average current depth to groundwater at the Property of 755 feet bls plus the simulated drawdown of 399 feet.

- A hydrograph of projected groundwater level drawdown for the 100-year pumping period at the point of maximum drawdown in the well field is shown on **Figure 6**. This hydrograph does not account for regional groundwater level decline.

- Projected 100-year impacts of pumping for water supply for the proposed development indicate that less than 300 feet of additional drawdown will be required to meet the needs of the development, and sufficient groundwater is available to serve the development and meet all ADWR requirements.

REFERENCES CITED

Anderson, T.W., Freethey, G.W., and Tucci, P., 1992, **Geohydrology and water resources of alluvial basins in south-central Arizona and parts of adjacent States:** U.S. Geological Survey Professional Paper 1406-B, 67 p.

Arizona Department of Environmental Quality, 2001, **Ambient groundwater quality of the Sacramento Valley basin: a 1999 baseline study:** Arizona Department of Environmental Quality Open File Report 10-04, June 2001, 78 p.

Cooper, Jr., H. H., and Jacob, C. E., 1946, **A generalized graphical method for evaluating formation constants and summarizing well-field history:** American Geophysical Union Transactions, v. 27, No. 4, August 1946, pp. 526-534.

Faulds, J.E., Feuerbach, D.L., Miller, C.F., and Smith, E.I., 2001, **Cenozoic evolution of the northern Colorado River extensional corridor, southern Nevada and northwest Arizona**: Pacific Section of the American Association of Petroleum Geologists Publication GB 78 (also Utah Geological Association Publication 30), p. 239-272.

Gillespie, J.B., Bentley, C.B., and Kam, W., 1966, **Basic hydrologic data of the Hualapai, Sacramento, and Big Sandy Valleys, Mohave County, Arizona:** Water-Resources Report Number 26, prepared by the U.S. Geological Survey for the Arizona State Land Department, March 1966.

Gillespie, J.B., and Bentley, C.B., 1971, **Geohydrology of Hualapai and Sacramento Valleys, Mohave County, Arizona:** U.S. Geological Survey Water Supply Paper 1899-H, 1971.

Heath, R., 1989, **Basic ground-water hydrology**: U. S. Geological Survey Water Supply Paper 2220, 84 p.

Manera, Inc., 1991, **Hydrogeologic evaluation of Golden Valley, Mohave County, Arizona:** Prepared for Mohave County Board of Supervisors, Golden Valley Improvement District #1, revised August 29, 1991.

_____, 1999, **Griffith production well 1: results of the drilling and testing program:** Prepared for Griffith Energy, L.L.C., March 20, 1999.

Mohave County, 2002, Golden Valley area plan: Available on website at http://www.co.mohave.az.us, August 14, 2002.

Oppenheimer, J.M., and Sumner, J.S., 1980, **Regional geophysics assessment of Southwest Alluvial Basins:** University of Arizona, final report for U.S. Geological Survey contract no. 14-08-0001-18228, 50 p.

Rascona, S.J., 1991, **Map showing groundwater conditions in the Sacramento Valley Basin, Mohave County, Arizona – 1991:** Arizona Department of Water Resources Hydrologic Map Series Report Number 21, scale 1:125,000, June 1991.

Richard, S.M., Reynolds, S.I., Spencer, J.E., and Pearthree, P.A., 2000, **Geologic Map of Arizona:** Arizona Geological Survey Map 35, scale 1:1,000,000

Stanley Consultants Inc., 2005, **Rhodes Homes Arizona Golden Valley South Engineering Report:** Prepared for Rhodes Homes, May 2005.

Theis, C.V., 1935, **The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage:** American Geophysical Union Transactions, vol. 16, pp. 519-524.

U.S. Environmental Protection Agency, July 2002, **List of contaminants & their Maximum Contaminant Level (MCLs):** U.S. Environmental Protection Agency, Office of Ground Water and Drinking Water, Washington, DC.

van der Heijde, P.K.M., 1996, **THWELLS, Flow in an** (sic) **confined, leaky confined or unconfined aquifer with regional uniform flow and multiple wells:** International Ground Water Modeling Center, Golden, Colorado, 83 p.

Western Regional Climate Center, 2005, **Western U.S. Climate Historical Summaries**: Website at http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?azkin2.

Wilson, R.P., and Owen-Joyce, S.J., 1994, **Method to identify wells that yield water that will be replaced by Colorado River water in Arizona, California, Nevada, and Utah:** United States Geological Survey Water-Resources Investigations Report 94-4005, Plate 10.

ERROL L. MONTGOMERY & ASSOCIATES, INC.

TABLES

CONTENTS

TABLES

1 WELL INVENTORY FOR SACRAMENTO VALLEY, MOHAVE COUNTY, ARIZONA

2 RESULTS FOR LABORATORY CHEMICAL ANALYSES FOR GROUNDWATER SAMPLES OBTAINED FROM GOLDEN VALLEY WELL GV-1, MOHAVE COUNTY, ARIZONA

TABLE 1. WELL INVENTORY FOR SACRAMENTO VALLEY
MOHAVE COUNTY, ARIZONA

WELL IDENTIFIER	RECORD SOURCE	ADWR 55-WELL REGISTRY NUMBER	35-WELL REGISTRY NUMBER	GWSI SITE ID	WELL NAME/ INDEX WELL	UTM COORDINATES (NAD 27) Easting (meters)	UTM COORDINATES (NAD 27) Northing (meters)	DATE COMPLETED	WELL DEPTH (feet, bls)	CASING DEPTH (feet, bls)	CASING DIAMETER (inches)	CASING PERFORATED INTERVAL (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL DATE	WATER LEVEL DEPTH (feet, bls)	WATER LEVEL ALTITUDE (feet, msl)	WELL / WATER USE	LOG TYPE	REPORTED PUMPING RATE (gpm)	REPORTED TESTING RATE (gpm)	OWNER
(B-17-16) 15bca	55	205569	—	—	—	229007.8	3861135.8	—	—	—	—	—	—	—	—	—	D	—	—	—	JIM COOPER
(B-17-16) 15cba	55	594458	—	—	—	228996.4	3860733.1	—	—	—	—	—	—	—	—	—	D	—	—	—	TOM CRAGER
(B-17-16) 15ccb	55	596695	—	—	—	228783.2	3860336.1	—	—	20	7	—	—	—	30	—	D	D	—	—	JIM COOPER
(B-17-16) 15ccd	55	594189	—	—	—	228979.4	3860129	—	—	20	7	—	—	—	—	—	D	D	—	—	JIM COOPER
(B-17-16) 15ccd	55	594957	—	—	—	228979.4	3860129	11/20/2002	305	305	6	—	—	11/20/2002	30	—	D	D	10	25	JIM COOPER
(B-17-16) 18caa	55	527132	—	—	—	224572.4	3860869.9	—	—	—	—	—	—	—	—	—	D	—	—	—	DORRIS, CARL,
(B-17-16) 29	55	579017	—	—	—	226184.8	3857693.9	—	—	—	—	—	—	—	—	—	—	—	—	—	DAVID TURPIN
(B-17-16) 29acc	55	597603	—	—	—	226288.9	3857791.6	—	1,470	1,470	5	—	—	—	—	—	D	D	—	—	DAVID TURPIN
(B-17-16) 29dbd	55	583220	—	—	—	226479.5	3857383.7	—	—	—	—	—	—	—	—	—	D	—	—	—	DAVID TURPIN
(B-17-17) 01bbd	55	574095	—	—	—	222687.5	3864746.5	—	360	360	7	—	—	—	—	—	D	D	—	—	EDITH R MANSFIELD
(B-17-17) 01bca	55	577032	—	—	—	222681.4	3864547.1	9/15/1999	550	525	4	—	—	9/15/1999	360	—	D	D	—	—	JOYCE MITCHAM
(B-17-17) 01bdb	55	575134	—	—	—	222882.3	3864541	—	—	—	—	—	—	—	—	—	D	—	—	—	KENNETH FORRESTER
(B-17-17) 01cad	55	563740	—	—	—	223065.2	3863935.1	—	420	420	4	—	—	—	340	—	NONE	D	—	—	MARY PRINCE
(B-17-17) 01ccc	55	565701	—	—	—	222449.1	3863557.6	5/5/1998	685	495	8	—	—	5/5/1998	400	—	D	D	7	1	FLOYD MOHR
(B-17-17) 01cdc	55	582023	—	—	—	222852.2	3863542.4	—	—	—	—	—	—	—	—	—	—	—	—	—	FLOYD MOHR
(B-17-17) 01dba	55	548891	—	—	—	223473.2	3864121.8	4/12/1995	400	400	7	—	—	4/12/1995	190	—	D, I	D	20	5	CARLTON, ROY,L
(B-17-17) 03	55	581299	—	—	—	219956	3864332.2	—	—	—	—	—	—	—	—	—	—	—	—	—	ROGER J MCCARTY
(B-17-17) 03cdb	55	581298	—	—	—	219638.4	3863840.5	7/6/2000	425	425	5	—	—	7/6/2000	250	—	D	D	—	—	WALTER R GOULD
(B-17-17) 11acb	55	565095	—	—	—	221624.8	3862976.9	6/12/1998	640	640	6	—	—	6/12/1998	453	—	D	D	8	8	WILLIAM L THOMPSON
(B-17-17) 11acd2	GWSI	—	—	345213114023301	—	221877.362	3862684.499	—	—	—	6 4	—	2,525	11/10/1995	442.2	2,083	U	—	—	—	EL MIRAGE RANCH
(B-17-17) 11bad	55	205836	—	—	—	221430.2	3863183.1	—	—	—	—	—	—	—	—	—	D	—	—	—	LAWRENCE C LAMB
(B-17-17) 11bbd	55	578313	—	—	—	221028.4	3863193.6	12/30/1999	565	540	5	—	—	12/30/1999	460	—	D	D	10	7	JIM COOPER
(B-17-17) 11caa	55	502493	—	—	—	221410.9	3862581.1	4/13/1982	555	555	6	—	—	4/13/1982	480	—	D	D	—	—	JEFFREY & BREND SWIHART
(B-17-17) 11cac	55	564788	—	—	—	221203	3862386.9	2/17/1998	150	50	8	—	—	2/17/1998	50	—	D	D	—	—	GEORGIA A CARMAN
(B-17-17) 11cac	55	517621	—	—	—	221203	3862386.9	6/12/1987	100	100	7	—	—	6/12/1987	50	—	D	D	10	10	CARMEN, GARY,
(B-17-17) 11cbd	55	526219	—	—	—	221001.6	3862393.3	10/10/1990	700	635	4	—	—	10/10/1990	400	—	D	D	1	1	HUNG TA SHEN
(B-17-17) 13add	55	527025	—	—	—	223775.4	3861100.6	1/26/1990	560	—	6	—	—	—	—	—	D	D	—	—	SEBERN, JUNE,M
(B-17-17) 17dda	55	589841	—	—	—	217320.5	3860690.6	—	—	—	—	—	—	—	—	—	D	—	—	—	BRUCE RUBENSTEIN
(B-17-17) 19bad	GWSI	—	—	345032114080501	—	213282.12	3860204.149	—	450	—	12	—	1,835	10/26/2000	383.9	1,451.1	U	—	—	—	—
(B-17-17) 21adc	55	587165	—	—	—	218686.9	3859634.9	—	—	—	—	—	—	—	—	—	D	—	—	—	FRANK KEMPT
(B-17-17) 29abd	55	556181	—	—	—	216842.3	3858476.9	—	—	—	—	—	—	—	—	—	D	—	—	—	BASSFORD, DENNIS,
(B-17-17) 29acc	55	504740	—	—	—	216629.9	3858080.5	8/20/1984	565	360	6	—	—	—	—	—	D	D	—	—	BAUMGARDNER, MARY,A
(B-17-17) 29acc	55	528851	—	—	—	216629.9	3858080.5	9/18/1990	737	737	4	—	—	9/18/1990	545	—	D	D	—	—	BAUMGARDNER, MARY,A
(B-17-17) 29acd1	GWSI	—	—	344939114054301	—	216904.536	3858086.367	—	—	—	6 12	—	2,055	—	—	—	U	—	—	—	—
(B-17-17) 29bca	55	573741	—	—	—	216034.3	3858299.6	11/9/1999	700	700	4	—	—	11/9/1999	640	—	D	D	28	20	RICHARD THOMACK
(B-17-17) 29ccd	55	568460	—	—	—	216002	3857295.4	10/26/1998	640	640	5	—	—	10/26/1998	540	—	D	D	—	—	ROY & ELIZABETH CARLTON
(B-17-17) 29cdd	55	567799	—	—	—	216404.6	3857282.3	—	—	—	—	—	—	—	—	—	D	—	—	—	EDWARD AND DOLL WHITMAN
(B-17-17) 29cdd	55	567832	—	—	—	216404.6	3857282.3	6/9/1998	660	20	7	—	—	—	—	—	D	D	—	—	EDWARD AND DOLL WHITMAN
(B-17-17) 29dcd	55	541970	—	—	—	216807.3	3857269.2	1/31/1994	700	700	7	—	—	1/31/1994	600	—	D	D	10	12	SHORE, DONALD,
(B-17-17) 30	55	807860	—	—	—	214310	3858049.3	—	—	—	—	—	—	—	—	—	—	—	—	—	BLM-KINGMAN FIELD OFFICE/
(B-17-17) 30cda	GWSI	—	—	344916114070201	—	214874.752	3857439.761	—	—	—	—	—	1,880	2/28/1979	439.6	1,440.4	C	—	—	—	—
(B-17-17) 30dcd	55	508588	—	—	—	214815.5	3857330.1	9/10/1984	628	350	6	—	—	—	—	—	NONE	D	—	—	EL PASO NATURAL GAS,
(B-17-17) 30ddd	35	—	—	—	—	—	—	1968	1,000	1,000	12	—	—	—	—	—	I	D	—	—	STANDARD METALS CORP
(B-17-17) 31aaa	55	585826	—	—	—	215513.2	3857109.5	3/13/2001	613	596	6	—	—	3/13/2001	540	—	D	D	—	—	ROBERT L LECKLIDER
(B-17-17) 31aad	55	588193	—	—	—	215507.1	3856908.9	—	—	—	—	—	—	—	—	—	D	—	—	—	JOE ST ONGE
(B-17-17) 31aba	55	637104	—	—	—	214807.3	3857128.4	5/1/1978	500	500	6	—	—	5/1/1978	473	—	D	—	15	15	HAROLD & VIRGIN GRISSOM
(B-17-17) 31aba	GWSI	637104	—	344907114065101	—	215145.716	3857153.703	—	500	—	6	—	1,888	3/19/1990	422.4	1,465.6	D	—	—	—	D. C. CURTIS
(B-17-17) 31aba	55	586437	—	—	—	214807.3	3857128.4	—	—	—	—	—	—	—	—	—	D	—	5	5	JOAN TOMLIN
(B-17-17) 31abc	55	578142	—	—	—	214449.3	3856937.8	1/10/2000	585	500	5	—	—	1/10/2000	535	—	D	D	7	6	JOHN & HELEN HOUSTON
(B-17-17) 31acb	55	202737	—	—	—	214443.8	3856736.5	—	380	380	5	—	—	—	281	—	D	D	—	—	MARY L PRINCE
(B-17-17) 31ada	55	578248	—	—	—	215501.1	3856708.3	1/12/2000	585	570	5	—	—	1/12/2000	535	—	D	D	—	—	VIRGINIA G HORNE
(B-17-17) 31adc	GWSI	—	—	344844114074501	35-38471	213751.058	3856487.611	5/27/1972	450	450	6	400-450	1,760	3/19/1990	325.8	1,434.2	D	D	—	—	WILLIAM SMITH
(B-17-17) 31baa	55	642665	—	—	—	214102.3	3857147.6	12/10/1980	404	404	6	—	—	12/10/1980	320	—	D, I	—	21	21	VANDEN HEUVEL, YVONN,M
(B-17-17) 31baa	55	573439	—	—	—	214102.3	3857147.6	4/14/1999	500	500	4	—	—	4/14/1999	440	—	D	D	—	—	JAMES & DEBORAH SHADWICK
(B-17-17) 31bb	55	645730	—	—	—	213217.7	3857072.3	1/1/1961	500	400	6	—	—	1/1/1961	300	—	D	—	20	20	KING,E L
(B-17-17) 31bbd	55	623569	—	—	—	213392.4	3856966.5	6/1/1978	465	465	6	—	—	6/1/1978	315	—	I, D, S	—	25	25	NELMS,,R E
(B-17-17) 31bbd	35	—	70373	—	—	—	—	1978	465	465	6	—	—	—	315	—	D	D	25	—	F. EAKINS
(B-17-17) 31abc	GWSI	—	—	344859114075701	35-70373	213460.47	3856959.419	10/4/1978	—	465	6	300-465	1,750	—	—	—	D	D	—	—	HERSEY
(B-17-17) 31bda	GWSI	—	—	344854114080901	—	213150.633	3856814.86	—	499	—	8	—	1,720	3/19/1990	280.2	1,439.8	D	—	—	—	WESTCOTTS
(B-17-17) 31bdb	GWSI	—	—	344847114075801	—	212920.901	3856791.2	12/31/1962	460	—	6	—	1,698	5/13/1980	268.27	1,430	U	—	—	—	K & A INVESTMENTS
(B-17-17) 31cbb	35	—	—	—	—	—	—	—	460	—	6	—	—	—	268	—	MUN	—	25	—	—
(B-17-17) 31cbd	55	536494	—	—	—	213372.1	3856159.3	9/15/1992	408	404	5	—	—	9/15/1992	310	—	D	D	15	15	HALPIN, E.J. & J.M.,
(B-17-17) 31cdd	35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	K	—	—	—	—
(B-17-17) 31daa	GWSI	—	—	344841114063701	—	215476.699	3856341.371	—	—	—	6	—	1,906	—	—	—	U	—	—	—	—
(B-17-17) 31dab	55	568522	—	—	—	215136.5	3856315.9	8/8/1998	585	585	7	—	—	8/8/1998	480	—	D	D	—	—	JOHN GRIFFIN
(B-17-17) 31dbb	55	601492	—	—	—	214432.9	3856334	1/1/1972	450	450	6	—	—	1/1/1972	400	—	I	—	35	—	HANCOCK, RUBEN & J,
(B-17-17) 31dbb	GWSI	601492	—	344841114070001	35-38471	214892.051	3856359.526	5/27/1972	450	450	6	400-450	1,857	3/19/1990	419.2	1,438	D	D	—	—	RUBEN & J HANCOCK
(B-17-17) 31dbb	35	—	38471	—	—	—	—	1972	450	450	6	—	—	—	400	—	I	D	10	—	E. DUNN
(B-17-17) 31dbb	55	564879	—	—	—	214432.9	3856334	—	400	400	4	—	—	—	360	—	D	D	—	—	M & D MOBIL INC
(B-17-17) 31dcb	55	563484	—	—	—	214421.9	3855931.4	7/26/1997	452	452	4	—	—	7/26/1997	400	—	D	D	—	—	PIERGROSSI, RALPH,

TABLE 1. WELL INVENTORY FOR SACRAMENTO VALLEY
MOHAVE COUNTY, ARIZONA

WELL IDENTIFIER	RECORD SOURCE	ADWR 55-WELL REGISTRY NUMBER	35-WELL REGISTRY NUMBER	GWSI SITE ID	WELL NAME/ INDEX WELL	UTM COORDINATES (NAD 27) Easting (meters)	UTM COORDINATES (NAD 27) Northing (meters)	DATE COMPLETED	WELL DEPTH (feet, bls)	CASING DEPTH (feet, bls)	CASING DIAMETER (inches)	CASING PERFORATED INTERVAL (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL DATE	WATER LEVEL DEPTH (feet, bls)	WATER LEVEL ALTITUDE (feet, msl)	WELL / WATER USE	LOG TYPE	REPORTED PUMPING RATE (gpm)	REPORTED TESTING RATE (gpm)	OWNER
(B-17-17) 32aba	55	589481	—	—	—	216798.4	3857067.8	—	—	—	—	—	—	—	—	—	D	—	—	—	SUE ANN MAYS
(B-17-17) 32acd	55	200361	—	—	—	216780.3	3856466.5	—	—	—	—	—	—	—	—	—	D	—	—	—	GEORGE & KATHLE MARTIN
(B-17-17) 32bdb	55	598638	—	—	—	216182.1	3856686	7/10/2003	675	675	7	—	—	7/10/2003	535	—	D	D	—	—	BILL ADAS
(B-17-17) 32ddb	55	205007	—	—	—	216963.5	3855859.2	—	—	—	—	—	—	—	—	—	D	—	—	—	HAROLD HUNT MADDREN III
(B-17-18) 12abd	55	613578	—	—	—	212602.7	3863796.4	6/19/1969	600	600	12	—	—	6/19/1969	355	—	C	D	250	800	FORD MOTOR CO,
(B-17-18) 12abd	GWSI	613578	—	345239114084001	NO 2	212580.321	3863773.838	6/19/1969	600	600	12	—	1,872	2/8/1979	356	1,516	IND	—	—	—	FORD MOTOR CO
(B-17-18) 12abd	35	—	—	—	—	—	—	1969	600	600	12	—	—	—	355	—	C	D	—	—	FORD MOTOR CO
(B-17-18) 12aca	55	600262	—	—	—	212593.1	3863597.3	1/1/1960	350	80	8	—	—	1/1/1960	80	—	D	N	20	80	WHITING BROS OIL CO,
(B-17-18) 12acb1	GWSI	600262	—	345232114084601	—	212421.144	3863562.892	—	350	—	8	—	1,850	3/20/1990	345.1	1,504.9	D	—	—	—	WHITING BROTHERS OIL CO.
(B-17-18) 12acb2	GWSI	—	—	345237114083001	—	212832.379	3863704.224	1/1/1961	450	—	—	—	1,860	1/1/1961	360	1,500	D	—	—	—	—
(B-17-18) 12acb	35	—	—	—	—	—	—	1961	450	—	—	—	—	—	360	—	D	—	65	—	—
(B-17-18) 12acc	55	631315	—	—	—	212382.1	3863404.8	1/1/1955	—	—	—	—	—	—	—	—	D	—	—	—	TRISHA K SPINELLO
(B-17-18) 12acc	GWSI	631315	—	345226114082601	—	212465.165	3863345.561	—	500	—	8	—	1,830	11/9/1995	350.6	1,479.4	U	—	—	—	—
(B-17-18) 12acc	35	—	—	—	—	—	—	1956	500	—	8	—	—	—	362	—	C	—	20	—	—
(B-17-18) 12ada	55	583553	—	—	—	213004.1	3863583.4	4/12/2001	660	610	8	—	—	4/12/2001	327	—	D	D	—	—	YUCCA WATER COOP
(B-17-18) 12bca	GWSI	627232	—	345232114091701	YUCCA NO. 2	211683.574	3863555.253	5/21/1903	1,004	753	10	650-753	1,803	11/10/1995	300.9	1,502	MUN	D	—	—	TOWN OF YUCCA
(B-17-18) 12bca	35	—	—	—	—	—	—	1903	1,004	650	10	—	—	—	310	—	MUN	D	200	—	—
(B-17-18) 12bcd	55	627232	—	—	—	211777.7	3863425.1	5/21/1903	1,004	753	10	—	—	—	—	—	MUN, IND	—	—	—	ATCHISON-TOPEKA,
(B-17-18) 12bca	55	627224	—	—	—	211785.6	3863624.1	9/5/1924	787	787	16	—	—	—	—	—	D, IND	—	—	—	ATCHISON-TOPEKA,
(B-17-18) 12bcb	35	—	—	—	—	—	—	1924	787	305	12	—	—	—	300	—	IND	D	120	—	—
(B-17-18) 12bcb	GWSI	627224	—	345232114091801	YUCCA NO. 3	211608.345	3863588.474	9/5/1924	787	0-302	16	—	1,804	1/1/1924	300	1,504	IND	D	—	—	ATCHISON-TOPEKA
										273-787	12	305-350									
											12	570-610									
(B-17-18) 12bcd	55	627259	—	—	—	211777.7	3863425.1	11/11/1899	788	788	6	—	—	—	—	—	D, IND	—	—	—	BURLINGTON NORTHERN SANTA
(B-17-18) 12bcd	35	—	—	—	—	—	—	1899	534	324	10	—	—	—	300	—	K	—	62	—	—
(B-17-18) 12bcd	GWSI	627259	—	345231114091701	YUCCA NO. 1	211706.061	3863461.995	1/1/1899	534	0-10	10	—	1,804	11/1/1899	300	1,504	Z	—	—	—	A T & SANTA FE RAILROAD CO
										10-534	8	324-344									
											8	514-534									
(B-17-18) 12bda	GWSI	—	—	345234114084901	—	212141.745	3863571.677	1/1/1961	400	—	4	—	1,830	—	—	—	C, D	—	—	—	HONOLULU CLUB
(B-17-18) 12bda	35	—	—	—	—	—	—	1961	400	—	4	—	—	—	340	—	C	—	60	—	—
(B-17-18) 12cda	55	641827	—	—	—	212154.5	3862814.2	6/15/1978	490	490	8	—	—	6/15/1978	320	—	D	—	15	15	DECHANT,W C
(B-17-18) 12cda	35	—	61805	—	—	—	—	1978	490	490	8	—	—	—	320	—	D	D	—	—	W. C. DECHANT
(B-17-18) 12dbb	55	627393	—	—	—	212373	3863205.6	10/1/1979	480	480	8	—	—	10/1/1979	320	—	D	—	20	20	GUINDON,J G
(B-17-18) 12dbb	35	—	70839	—	—	—	—	1979	480	480	8	—	—	—	320	—	D	D	20	—	J. G. GUINDON
(B-17-18) 12dcc	GWSI	631314	—	345201114082901	—	212441.925	3862605.9	—	500	—	6	—	1,830	11/9/1995	340.7	1,489.3	D	—	—	—	A. A. SANDERSON
(B-17-18) 12dcc	35	—	—	—	—	—	—	1960	500	—	6	—	—	—	362	—	D	—	20	—	—
(B-17-18) 12dcd	55	631314	—	—	—	212545.3	3862601.4	1/1/1960	—	—	—	—	—	—	—	—	D	—	—	—	WESTERN LAND SALES C,O
(B-17-18) 13aaa	55	800322	—	—	—	212939	3862384.3	1/1/1970	545	560	12	—	—	1/1/1970	390	—	D	—	120	120	LUBEN INDUSTRIES INC,
(B-17-18) 13aaa	GWSI	800322	—	345156114082201	—	212995.95	3862434.264	—	545	—	12	—	1,870	11/9/1995	381.2	1,488.8	D	—	—	—	LUBEN INDUSTRIES
(B-17-18) 13acb	55	505097	—	—	—	212328.3	3862000.9	—	—	—	—	—	—	—	—	—	I	—	—	—	SCHIMMEL,H
(B-17-18) 13add	55	522656	—	—	—	212922.8	3861778	11/18/1988	453	453	7	—	—	11/18/1988	365	—	D	D	10	10	HERRIDGE, IRWIN & M,
(B-17-18) 13bbd	55	545357	—	—	—	211734.8	3862224.1	—	—	—	—	—	—	—	—	—	T	—	—	—	SCOTT PAPER CO,
(B-17-18) 13bcc	GWSI	—	—	345132114091101	—	211727.912	3861733.716	—	—	—	12	—	1,760	11/9/1995	258.7	1,501.3	U	—	—	—	LUBEN IND
(B-17-18) 25adb	55	628122	—	—	—	212619.3	3858766.1	6/29/1970	712	712	6	—	—	6/29/1970	299	—	D	—	15	15	ADOT,
(B-17-18) 25ac	35	—	—	—	—	—	—	1970	712	692	8	—	—	—	307	—	D	D, G	—	—	—
(B-17-18) 25adb1	GWSI	628122	—	344954114084501	—	212523.288	3858716.312	6/26/1970	712	0-700	8	—	1,740	11/9/1995	295.8	1,444.2	U	D, G	—	—	ADOT
										692-712	6	692-712									
(B-17-18) 25adb	55	628123	—	—	—	212619.3	3858766.1	1/7/1980	800	800	8	—	—	1/7/1980	305	—	D	—	35	35	ADOT,
(B-17-18) 25adb2	GWSI	628123	—	344954114083401	35-82309	212523.288	3858716.312	1/7/1980	810	800	8	350-720	1,740	3/20/1990	295.8	1,444.2	MUN	—	—	—	ADOT
(B-17-18) 25adb	35	—	82309	—	—	—	—	1979	810	800	9	—	—	—	305	—	D	D	100	—	ADOT
(B-17-18) 25adb	55	637326	—	—	—	212619.3	3858766.1	6/29/1970	712	712	8	—	—	6/29/1970	300	—	D	—	15	15	ADOT,
(B-17-18) 25adb	35	—	—	—	—	—	—	1970	712	712	8	—	—	—	307	—	D	D	33	—	ARIZ HWY DEPT
(B-18-17) 07dc	55	642236	—	—	—	215111.4	3871924.4	—	—	—	—	—	—	—	—	—	S	—	—	—	BLM-PHOENIX DISTRICT,
(B-18-17) 08bd	55	528796	—	—	—	216783.6	3872681.1	9/10/1990	625	80	8	—	—	—	—	—	NONE	D	—	—	EL PASO NATURAL GAS,
(B-18-17) 11cb	55	638924	—	—	—	221191.6	3872132	—	—	—	—	—	—	—	—	—	D, S	—	—	—	HAZEN,T
(B-18-17) 11cbc	GWSI	638924	—	345715114030701	—	221297.742	3872017.941	—	110	—	—	—	2,800	—	—	—	S	—	2	—	T HAZEN
(B-18-17) 11cbc	35	—	—	—	—	—	—	—	110	—	—	—	—	—	—	—	S	—	—	—	—
(B-18-17) 11cc	55	805611	—	—	—	221177.7	3871728.4	6/1/1980	—	—	8	—	—	—	—	—	S, D	—	—	—	GARY, LINDA, CL OVERSON
(B-18-17) 11dbb	55	504797	—	—	—	221901.2	3872209.6	—	—	—	—	—	—	—	—	—	D	—	—	—	PATTERSON,P
(B-18-17) 11dbb	55	504798	—	—	—	221901.2	3872209.6	—	—	—	—	—	—	—	—	—	D	—	—	—	PATTERSON,P
(B-18-17) 11dbb	55	504796	—	—	—	221901.2	3872209.6	—	—	—	—	—	—	—	—	—	D	—	—	—	PATTERSON,P
(B-18-17) 19baa	55	597276	—	—	—	214522.5	3870027.8	3/6/2003	560	560	7	—	—	3/6/2003	490	—	D	D	—	—	W.P. WORMAN
(B-18-17) 19dba	55	542812	—	—	—	215196.7	3869203.2	7/21/1994	450	450	6	—	—	7/21/1994	400	—	D	D	—	—	WALLACE, DAVID,
(B-18-17) 19dcc	55	560452	—	—	—	214833	3868611.6	—	—	—	—	—	—	—	—	—	D	—	—	—	SIMPSON, BILL,
(B-18-17) 30abb	55	522023	—	—	—	214824.1	3868410	8/23/1988	320	320	10	—	—	—	—	—	MIN	D	—	—	FNF CONSTRUCTION, INC.
(B-18-17) 31cbb	55	533283	—	—	—	213355	3866036.2	12/28/1991	485	463	7	—	—	12/28/1991	375	—	D	D	—	—	MORALIS, PEDRO,
(B-18-17) 32abc	55	539700	—	—	—	216900.5	3866532.9	7/1/1993	500	500	12	—	—	—	—	—	NONE	D	—	—	EL PASO NATURAL GAS,
(B-18-17) 34bbb	35	—	—	—	—	—	—	—	165	—	—	—	—	—	105	—	S	—	—	—	—
(B-18-18) 01dcd	35	—	—	—	—	—	—	5/17/1905	722	722	12	—	—	—	200	—	IND	D, G	250	—	FRONTIER VALLEY NO 1
(B-18-18) 01dcd	GWSI	—	—	345801114082801	—	212976.294	3873941.835	11/1/1964	740	0-530	1210	—	2,181	10/22/2003	527.9	1,653.1	U	D, G	—	—	YAVAPAI HOTEL CORP
										508-735		508-728									
(B-18-18) 03ada	55	563937	—	—	—	210143.6	3874941	—	660	660	6	—	—	—	460	—	I	D	45	49	JAMES A & RUTH SIMPSON

ERROL L. MONTGOMERY & ASSOCIATES, INC.

TABLE 1. WELL INVENTORY FOR SACRAMENTO VALLEY
MOHAVE COUNTY, ARIZONA

WELL IDENTIFIER	RECORD SOURCE	ADWR 55-WELL REGISTRY NUMBER	35-WELL REGISTRY NUMBER	GWSI SITE ID	WELL NAME/ INDEX WELL	UTM COORDINATES (NAD 27) Easting (meters)	UTM COORDINATES (NAD 27) Northing (meters)	DATE COMPLETED	WELL DEPTH (feet, bls)	CASING DEPTH (feet, bls)	CASING DIAMETER (inches)	CASING PERFORATED INTERVAL (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL DATE	WATER LEVEL DEPTH (feet, bls)	WATER LEVEL ALTITUDE (feet, msl)	WELL / WATER USE	LOG TYPE	REPORTED PUMPING RATE (gpm)	REPORTED TESTING RATE (gpm)	OWNER
(B-18-18) 25	55	636231	---	---	---	212435.3	3868137.3	---	---	---	---	---	---	---	---	---	I, D	---	---	---	HELMICH INVEST CORP,
(B-18-18) 25bcd	55	533171	---	---	---	211935.3	3868254	---	---	---	---	---	---	---	---	---	D	---	---	---	OWENS, RON & MAURINE,
(B-18-18) 25ccc	55	536616	---	---	---	211705.6	3867457.5	11/20/1992	550	550	7	---	---	11/20/1992	345	---	D	D	75	75	RUTHER, RUBAL,
(B-18-18) 25ccc	GWSI	536616	---	345435114092301	---	211600.928	3867383.262	11/20/1992	550	0-20 0-550	7 5	--- 400-550	1,936	11/10/1995	340.5	1,595.5	U	D	---	---	RUBAL RUTHER
(B-18-18) 35	55	636230	---	---	---	210773.1	3866581.6	---	---	---	---	---	---	---	---	---	I, D	---	---	---	HELMICH INVEST CORP,
(B-18-18) 35abd	55	598271	---	---	---	211090.3	3867075.6	---	435	435	6	---	---	---	300	---	D	D	---	---	DENNIS HEATH
(B-18-18) 35bcb	55	204031	---	---	---	210081	3866907.7	---	460	455	7	---	---	---	294	---	D	D	---	---	NORTH PIONEER VALLEY LLC
(B-19-17) 03db	55	518945	---	---	---	220727	3883419.2	10/9/1987	500	100	6	---	---	---	---	---	NONE	D	---	---	EL PASO NATURAL GAS
(B-19-17) 06aad	55	581976	---	---	---	216347.6	3884262.9	8/12/2000	400	20	6	---	---	---	---	---	T	D	---	---	CITIZENS ARIZONA GAS
(B-19-17) 06acb	35	---	---	---	---	---	---	1903	684	437	12	---	---	---	400	---	IND	D	6	---	---
(B-19-17) 06abb	GWSI	---	---	350335114064801	---	215844.541	3884464.209	11/3/1901 1/13/1903	684	0-200 200-220 220-575	12 10 8	--- --- 437-575	2,620	---	---	---	U	D	---	---	A T & A SANTA FE RAILROAD CO
(B-19-17) 06dbb	55	585330	---	---	---	215274.8	3883694.3	2/9/2001	51	51	4	---	---	---	---	---	T	D	---	---	GRIFFITH ENERGY LLC
(B-19-17) 06dbb	55	585331	---	---	---	215274.8	3883694.3	2/8/2001	51	51	4	---	---	---	---	---	T	D	---	---	GRIFFITH ENERGY LLC
(B-19-17) 06dbb	55	585332	---	---	---	215274.8	3883694.3	2/8/2001	51	51	4	---	---	---	---	---	T	D	---	---	GRIFFITH ENERGY LLC
(B-19-17) 16aa	55	638925	---	---	---	219449.1	3881042.3	---	---	---	---	---	---	---	---	---	D	---	---	---	HAZEN,T
(B-19-17) 16ac	55	805603	---	---	---	219034.3	3880653.6	6/1/1980	---	---	8	---	---	---	---	---	S	---	---	---	GARY, LINDA, CL OVERSON
(B-19-17) 16ad	55	642240	---	---	---	219437.2	3880640.6	---	60	---	8	---	---	---	---	---	S	---	---	---	BLM-PHOENIX DISTRICT
(B-19-17) 16ada	GWSI	642240	---	350152114042701	---	219534.473	3880740.293	---	90	---	---	---	2,730	---	---	---	S	---	---	---	BLM
(B-19-17) 16ada	35	---	---	---	---	---	---	---	90	---	---	---	---	---	---	---	S	---	1	---	---
(B-19-17) 18bbc	55	513097	---	---	---	213784.4	3881121	---	---	---	---	---	---	---	---	---	D	---	---	---	ELDEAN, FRED,
(B-19-18) 04bbc	55	540377	---	---	---	207391.1	3884895.9	---	---	---	---	---	---	---	---	---	C, D	---	---	---	CRSS CAPITAL COGEN,
(B-19-18) 05bda	55	529616	---	---	---	206378.6	3884731.7	11/15/1990	625	625	6	---	---	11/15/1990	513	---	D, I	D	18	18	GIST, JOHN,A
(B-19-18) 07abb	55	559265	---	---	---	204937.2	3883564.5	10/5/1996	600	600	7	---	---	10/5/1996	510	---	D	D	10	10	CHARLOTTE S BEKOLAY
(B-19-18) 07abb	55	578400	---	---	---	204937.2	3883564.5	---	608	608	7	---	---	---	485	---	D	D	10	10	CHARLOTTE S BEKOLAY
(B-19-18) 07dbd	55	562893	---	---	---	205105.6	3882553.7	6/10/1997	625	625	7	---	---	6/10/1997	525	---	D	D	10	12	COX, WILLIAM,
(B-19-18) 10	55	577996	---	---	---	209634.6	3882696.8	---	---	---	---	---	---	---	---	---	NONE	---	---	---	GRIFFITH ENERGY LLC
(B-19-18) 10aaa	55	580149	---	---	---	210358.4	3883378.8	6/12/2000	1,630	1,600	20	---	---	6/12/2000	618	---	IND	D	---	---	MOHAVE COUNTY
(B-19-18) 10abb	55	574435	---	---	---	209755.4	3883396.9	---	---	---	---	---	---	---	---	---	C	---	---	---	GRIFFITH ENERGY LLC
(B-19-18) 10bbb	55	574431	---	---	---	208952.3	3883420.9	---	---	---	---	---	---	---	---	---	T	---	---	---	GRIFFITH ENERGY LLC
(B-19-18) 10caa	55	574432	---	---	---	209531.6	3882598.8	---	---	---	---	---	---	---	---	---	C	---	---	---	GRIFFITH ENERGY LLC
(B-19-18) 10cbb	55	574433	---	---	---	208929.8	3882615.4	12/10/2000	1,425	1,425	10	---	---	12/10/2000	544	---	C	D	---	---	MOHAVE COUNTY
(B-19-18) 10cdd	55	571357	---	---	---	209514.3	3881995.6	4/21/1999	1,430	1,430	18	---	---	4/21/1999	560	---	C	D	---	---	MOHAVE COUNTY
(B-19-18) 10daa	55	574434	---	---	---	210334.2	3882576.5	12/21/2099	1,525	942	20	---	---	12/21/2099	612	---	C	D	---	---	MOHAVE COUNTY
(B-19-18) 10ddd	55	513382	---	---	---	210316	3881974.2	3/23/1986	800	800	8	---	---	3/23/1986	597	---	IND	D	---	---	MOHAVE COUNTY
(B-19-18) 10ddd	GWSI	513382	---	350223114102901	---	210383.81	3881859.999	3/23/1986	800	800	8	630-790	2,283	3/19/1990	596.8	1,686.2	IND, D	D	---	---	FRED R. ELDEAN
(B-19-18) 12	55	636232	---	---	---	212850.2	3882597.8	---	---	---	---	---	---	---	---	---	I, D	---	---	---	HELMICH INVEST CORP,
(B-19-18) 13	55	636233	---	---	---	212799	3880986.5	---	---	---	---	---	---	---	---	---	I, D	---	---	---	HELMICH INVEST CORP,
(B-19-18) 14baa	55	552633	---	---	---	211111.2	3881745.9	10/30/1995	1,010	685	8	---	---	10/30/1995	605	---	PROD, C	D	---	---	CITIZENS UTILITIES CO
(B-19-18) 15	55	577995	---	---	---	209587.7	3881088.6	---	---	---	---	---	---	---	---	---	NONE	---	---	---	GRIFFITH ENERGY LLC
(B-19-18) 15aaa	55	579003	---	---	---	210309.6	3881772.8	---	---	---	---	---	---	---	---	---	IND	---	---	---	GRIFFITH ENERGY LLC
(B-19-18) 15aaa	55	585853	---	---	---	210309.6	3881772.8	---	---	---	---	---	---	---	---	---	IND	---	---	---	MOHAVE COUNTY
(B-19-18) 15acc	55	574436	---	---	---	209690.3	3881186.2	5/2/2000	1,520	1,500	20	---	---	5/2/2000	559	---	C	D	---	---	MOHAVE COUNTY
(B-19-18) 15add	55	578281	---	---	---	210291.4	3881169.9	2/1/2000	1,425	672	20	---	---	2/1/2000	580	---	D	D	---	---	MOHAVE COUNTY
(B-19-18) 16aaa	55	85460	---	---	---	208705.1	3881817.2	9/5/1980	700	700	7	---	---	---	---	---	D	D	---	---	ELDEAN,F R
(B-19-18) 16aaa	GWSI	85460	---	350221114113401	---	208734.122	3881850.981	9/5/1980	700	700	6	650-680	2,236	11/9/1995	524.6	1,711.4	U	D	---	---	FRED R. ELDEAN
(B-19-18) 17	55	636239	---	---	---	206368.9	3881201.9	---	---	---	---	---	---	---	---	---	I, D	---	---	---	GOLD ROAD RANCH INC
(B-19-18) 17	55	636240	---	---	---	206368.9	3881201.9	---	---	---	---	---	---	---	---	---	I, D	---	---	---	GOLD ROAD RANCH INC
(B-19-18) 18ccd	55	540606	---	---	---	204254.6	3880573.6	---	---	---	---	---	---	---	---	---	NONE	---	---	---	FOUR CORNERS PIPE
(B-19-18) 18ccd	55	541336	---	---	---	204254.6	3880573.6	12/4/1993	500	500	8	---	---	12/4/1993	---	---	NONE	D	---	---	FOUR CORNERS PIPE
(B-19-18) 22dcd	55	538330	---	---	---	209814.7	3878768.1	6/15/1993	615	595	6	---	---	6/15/1993	530	---	D	D	---	---	DILLON, MELISSA,R
(B-19-19) 01caa	55	595965	---	---	---	203160.7	3884439.8	1/2/2003	715	715	7	---	---	1/2/2003	555	---	D	D	---	---	ELIZABETH J. WHITE
(B-19-19) 01ccc	55	581759	---	---	---	202539.3	3883851.6	7/17/2000	680	680	5	---	---	7/17/2000	600	---	D	D	---	---	LOWELL GLADY
(B-19-19) 03	55	636235	---	---	---	200043.6	3884647.1	---	---	---	---	---	---	---	---	---	I, D	---	---	---	GOLD ROAD RANCH INC
(B-19-19) 03	55	636236	---	---	---	200043.6	3884647.1	---	---	---	---	---	---	---	---	---	I, D	---	---	---	GOLD ROAD RANCH INC
(B-19-19) 03aca	55	587456	---	---	---	200354.5	3884942.4	7/8/2001	625	500	6	---	---	7/8/2001	580	---	D	D	12	12	DALE & JOANN COOK
(B-19-19) 03cca	GWSI	---	---	350324114173401	---	199672.233	3884089.593	---	---	---	---	---	2,600	---	---	---	S	---	---	---	---
(B-19-19) 11	55	636234	---	---	---	201606.6	3882974.8	---	---	---	---	---	---	---	---	---	I, D	---	---	---	GOLD ROAD RANCH INC
(B-19-19) 11ccd	55	572677	---	---	---	201082.8	3882289.3	3/21/1999	400	400	4	---	---	3/21/1999	230	---	D	D	10	25	MICHAEL PETRIGALA
(B-19-19) 11dbb	55	565657	---	---	---	201703.3	3882870.9	6/15/1998	675	675	7	---	---	6/15/1998	500	---	D	D	---	---	ROY D BRYANT, JR
(B-19-19) 12	55	524949	---	---	---	203217.1	3882918.9	6/23/1989	550	20	8	---	---	---	---	---	NONE	D	---	---	ENRON GAS PIPELINE,
(B-19-19) 12acd	55	524954	---	---	---	203522.6	3883009.7	---	---	---	---	---	---	---	---	---	NONE	---	---	---	TRANSWESTERN PIPELN.
(B-19-19) 12acd	55	561503	---	---	---	203522.6	3883009.7	5/11/1997	525	20	8	---	---	---	---	---	NONE	D	---	---	TRANSWESTERN PIPELN
(B-19-19) 12bca	55	587459	---	---	---	202722.6	3883238.2	8/14/2001	760	760	5	---	---	8/14/2001	452	---	D	D	---	---	FOREVER SPRINGTIME LLC
(B-19-19) 12dcc	55	576058	---	---	---	203298	3882210.6	8/18/1999	700	700	4	---	---	8/18/1999	550	---	D	D	---	---	RICHARD & GLEND BONE
(B-19-19) 22bdb	GWSI	---	---	350115114172901	---	199667.681	3880109.456	---	---	---	---	---	2,550	---	---	---	S	---	---	---	---
(B-19-19) 23	55	636237	---	---	---	201508.8	3879755.1	---	---	---	---	---	---	---	---	---	I, D	---	---	---	GOLD ROAD RANCH INC
(B-19-19) 23	55	636238	---	---	---	201508.8	3879755.1	---	---	---	---	---	---	---	---	---	I, D	---	---	---	GOLD ROAD RANCH INC
(B-20-17) 04	55	606484	---	---	---	219231.2	3893556.8	1/1/1958	100	40	8	---	---	1/1/1958	90	---	IND	---	15	15	ARNOLD,A A
(B-20-17) 04	55	606485	---	---	---	219231.2	3893556.8	1/1/1960	102	40	8	---	---	1/1/1960	90	---	IND	---	25	25	ARNOLD,A A

TABLE 1. WELL INVENTORY FOR SACRAMENTO VALLEY
MOHAVE COUNTY, ARIZONA

WELL IDENTIFIER	RECORD SOURCE	ADWR 55-WELL REGISTRY NUMBER	35-WELL REGISTRY NUMBER	GWSI SITE ID	WELL NAME/ INDEX WELL	UTM COORDINATES (NAD 27) Easting (meters)	UTM COORDINATES (NAD 27) Northing (meters)	DATE COMPLETED	WELL DEPTH (feet, bls)	CASING DEPTH (feet, bls)	CASING DIAMETER (inches)	CASING PERFORATED INTERVAL (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL DATE	WATER LEVEL DEPTH (feet, bls)	WATER LEVEL ALTITUDE (feet, msl)	WELL / WATER USE	LOG TYPE	REPORTED PUMPING RATE (gpm)	REPORTED TESTING RATE (gpm)	OWNER
(B-20-17) 04	55	608983	—	—	—	219231.2	3893556.8	1/1/1901	100	80	10	—	—	1/1/1901	30	—	D	—	200	—	ARNOLD,A A
(B-20-17) 04abb	55	508641	—	—	—	219356.4	3894443.3	8/20/1984	—	—	—	—	—	—	—	—	NONE	D	—	—	COBRE MINING CO,
(B-20-17) 04bcc	55	550340	—	—	—	218526.5	3893703.1	8/24/1995	100	20	8	—	—	—	—	—	MON	D	—	—	NORTH STAR STEEL
(B-20-17) 04bcc	55	552052	—	—	—	218526.5	3893703.1	8/29/1995	165	165	8	—	—	—	—	—	MON	D	5	1	HYATT III. RICHARD
(B-20-17) 04caa	55	546597	—	—	—	219125.5	3893431.8	—	—	—	—	—	—	—	—	—	C	—	—	—	SANTA FE R/R CO.
(B-20-17) 04cbb	55	546593	—	—	—	218519.8	3893449.3	10/31/1994	248	20	8	—	—	10/31/1994	108	—	IND	D	—	—	NORTH STAR STEEL,
(B-20-17) 04ccd	GWSI	—	—	350926114051101	—	218712.836	3894339.221	—	—	—	—	—	2,980	5/4/1978	100	2,880	IND	—	—	—	WMK MIX CO
(B-20-17) 05aca	55	536423	—	—	—	217929	3893974.1	9/13/1992	150	150	7	—	—	9/13/1992	80	—	D, I, S	D	—	—	ZUMWALT, JAMES,E
(B-20-17) 05acc	55	546702	—	—	—	217721.2	3893726.7	—	—	—	—	—	—	—	—	—	PROD	—	—	—	NORTH STAR STEEL AZ
(B-20-17) 05acc	55	546703	—	—	—	217721.2	3893726.7	—	—	—	—	—	—	—	—	—	PROD	—	—	—	NORTH STAR STEEL AZ
(B-20-17) 05ad	55	619673	—	—	—	218227.6	3893839.6	3/30/1997	681	681	16	—	—	3/30/1997	200	—	S	—	5	5	ZUMWALT, WILLIAMS
(B-20-17) 05cac	55	546592	—	—	—	217304.9	3893233.6	—	—	—	—	—	—	—	—	—	IND	—	—	—	NORTH STAR STEEL
(B-20-17) 05dab	GWSI	—	—	350840114053801	—	218121.423	3893247.026	—	—	—	—	—	2,935	2/27/1979	150	2,785	D	—	—	—	—
(B-20-17) 05dda	55	546595	—	—	—	218305.3	3892949.6	11/2/1994	165	—	—	—	—	—	—	—	IND	D	—	—	NORTH STAR STEEL,
(B-20-17) 05ddb	55	550339	—	—	—	218104.1	3892955.9	8/23/1995	200	197	8	—	—	—	—	—	MON	D	5	1	NORTH STAR STEEL,
(B-20-17) 05ddd	55	546594	—	—	—	218298.8	3892695.3	—	—	—	—	—	—	—	—	—	IND	—	—	—	NORTH STAR STEEL,
(B-20-17) 07aab	55	526526	—	—	—	216249.5	3892533.8	1/3/1990	520	520	7	—	—	1/3/1990	178	—	D	D	—	—	WALNUT CREEK DEV CO,
(B-20-17) 07aab1	GWSI	526526	—	350817114063901	—	216554.956	3892586.352	1/3/1990	520	0-65	7	—	2,864	11/6/1996	177	2,687	U	D	—	—	WALNUT CREEK DEVELOPMENT CO
										0-520	5	420-520									
(B-20-17) 07aab	55	529524	—	—	—	216249.5	3892533.8	10/31/1990	480	480	6	—	—	10/31/1990	175	—	D	D	—	—	WALNUT CREEK DEV CO,
(B-20-17) 07aab2	GWSI	529524	—	350818114063901	—	216453.683	3892589.52	10/31/1990	480	0-180	6	—	2,864	10/22/2003	179.4	2,684.6	U	D	—	—	WALNUT CREEK DEVELOPMENT CO
										0-480	5	0-280									
(B-20-17) 07acc	55	561553	—	—	—	215530.6	3891947.1	6/6/1997	248	242	8	—	—	6/6/1997	196	—	D	D	—	—	WAGNER, JERRY,A
(B-20-17) 07adb	55	523931	—	—	—	216237.7	3892129.9	6/14/1989	270	270	7	—	—	6/14/1989	210	—	S	D	12	12	CAMPA, MICKEY,
(B-20-17) 07adb	55	523932	—	—	—	216237.7	3892129.9	6/15/1989	280	280	7	—	—	6/15/1989	185	—	D	D	15	11	CAMPA, MICKEY,
(B-20-17) 07bbb	55	506325	—	—	—	214145.1	3892588.7	1/19/1984	1,005	825	9	—	—	1/19/1984	295	—	D	D	67	—	WALNUT CREEK DEV CO,
(B-20-17) 07bbb	GWSI	506325	—	350814114082001	—	213994.877	3892574.241	1/19/1984	1,005	0-20	8	—	2,735	11/7/1995	406.9	2,328.1	MUN	D	—	—	WALNUT CREEK DEVELOPMENT
										0-825	6	290-790									
(B-20-17) 07bbb	55	580129	—	—	—	214145.1	3892588.7	4/28/2000	905	40	8	—	—	4/28/2000	380	—	D	D	100	100	WALNUT CREEK WATER COMPAN
(B-20-17) 07caa	55	506324	—	—	—	215174.2	3891755.3	12/10/1983	523	520	7	—	—	12/10/1983	344	—	D	D	16	16	DENNIS M & NANC GUSTAFSON
(B-20-17) 07cbb	55	581044	—	—	—	214120	3891784.3	5/19/2000	700	670	6	—	—	5/19/2000	485	—	D	D	105	116	WALNUT CREEK WATER COMPAN
(B-20-17) 07ccc	55	507794	—	—	—	214103.4	3891181.5	5/17/1984	650	650	7	—	—	5/17/1984	330	—	D	D	15	15	HENTON, CLARENCE,
(B-20-17) 07cdd	55	507792	—	—	—	215156.8	3891150.7	—	—	—	—	—	—	—	—	—	D	—	—	—	WALNUT CREEK DEV CO,
(B-20-17) 07dbb	55	642896	—	—	—	215524.7	3891745.6	—	380	380	5	—	—	—	240	—	I, S, D	—	34	34	CAMPA,M L
(B-20-17) 08bbb	55	642895	—	—	—	216878.4	3892515.6	6/15/1944	350	350	6	—	—	6/15/1944	200	—	I, S, D	—	30	30	CAMPA,M M
(B-20-17) 08bbb	GWSI	642895	—	350817114062901	—	216857.813	3892546.034	—	350	350	6	—	2,862	11/7/1995	150.1	2,711.9	D, S, I	—	—	—	MANUAL OR LINDA CAMPA
(B-20-17) 08bcb	55	521974	—	—	—	216866	3892110.8	9/5/1988	400	400	10	—	—	9/5/1988	210	—	D	D	87	87	PATRIOE C ACKERMAN
(B-20-17) 08bcb	GWSI	521974	—	350800114062901	—	216791.766	3892054.499	9/5/1988	400	0-20	10	—	2,840	11/9/1995	199.8	2,640	MUN	D	4	—	DOY GATLIN
										0-400	7	300-400									
(B-20-17) 08bcb	55	543323	—	—	—	216866	3892110.8	4/27/1995	540	540	12	—	—	4/27/1995	300	—	C	D	—	—	INDIANA WESTERN EXPR,E S
(B-20-17) 09bba	55	546981	—	—	—	218694.6	3892452.8	—	—	—	—	—	—	—	—	—	MON	—	—	—	NORTH STAR STEEL AZ,
(B-20-17) 09bcc	55	546596	—	—	—	218473.2	3891853	10/27/1994	188	—	—	—	—	10/27/1994	153	—	IND	D	—	—	NORTH STAR STEEL,
(B-20-17) 09cac	55	546591	—	—	—	218864	3891437.1	—	—	—	—	—	—	—	—	—	IND	—	—	—	NORTH STAR STEEL,
(B-20-17) 17bb	55	642244	—	—	—	216925.8	3890794.3	—	30	—	—	—	—	—	—	—	S	—	—	—	BLM-PHOENIX DISTRICT,
(B-20-17) 19aba	55	549434	—	—	—	215799.5	3889318.8	7/18/1995	400	—	6	—	—	—	—	—	NONE	D	—	—	TRANSWESTERN PIPELN,
(B-20-17) 29bcc	55	500755	—	—	—	216712.6	3887072.9	1/1/1981	200	—	—	—	—	—	—	—	D	D	—	—	MARTIN, OMAR,
(B-20-17) 29daa	GWSI	—	—	350511114053301	—	218047.822	3886801.803	—	565	—	—	—	2,920	10/24/1979	56.17	2,863.83	U	—	—	—	OMAR MARTIN
(B-20-18) 01cdc	55	544979	—	—	—	212883.3	3893183.4	—	—	—	—	—	—	—	—	—	D	—	—	—	PENROD, PRESTON,
(B-20-18) 04bbb	55	623085	—	—	—	207698.5	3894793.6	9/1/1963	1,350	1,300	20	—	—	9/1/1963	725	—	MIN	—	1,000	1,000	VALLEY PIONEERS WATER COM
(B-20-18) 04bbb	GWSI	623085	—	350920114122701	WELL NO. 5-E	207806.688	3894807.96	—	1,350	—	20	—	2,524	11/9/1995	748.6	1,775.4	IND	G	—	—	CYPRUS MINERAL PARK
(B-20-18) 04bbb	35	—	—	—	—	—	—	5/16/1905	1,350	1,000	20	—	—	—	740	—	IND	A, G	670	—	—
(B-20-18) 06bda	55	203347	—	—	—	205086.5	3894469.1	—	20	20	7	—	—	—	—	—	D	D	—	—	PAUL J WASSELL
(B-20-18) 07bbd	55	577620	—	—	—	204648.5	3893057.1	2/15/2000	830	830	5	—	—	2/15/2000	740	—	D	D	—	—	GARY WILLIAMS
(B-20-18) 13dcd	55	559396	—	—	—	213382.2	3889940.1	9/6/1996	580	580	4	—	—	9/6/1996	310	—	D	D	—	—	LOVE, GANO,
(B-20-18) 17daa	55	205467	—	—	—	207373.5	3890749.7	—	—	—	—	—	—	—	—	—	D	—	—	—	GRAHAME MEASOR
(B-20-18) 22aac	GWSI	—	—	350633114103701	—	210453.085	3889601.534	—	779	—	—	—	2,495	8/18/2004	743.9	1,751.1	U	—	—	—	—
(B-20-18) 22aac	35	—	—	—	—	—	—	—	800	—	—	—	—	—	738	—	K	—	—	—	—
(B-20-18) 23cad	55	543553	—	—	—	211336.9	3888795.2	8/2/1994	900	900	5	—	—	8/2/1994	600	—	D	D	15	18	DON PARKER
(B-20-18) 27	55	649733	—	—	—	209786.6	3887536.8	—	165	—	—	—	—	—	600	—	D	—	—	—	HARRISON,H G
(B-20-18) 27dad	55	526124	—	—	—	210481.4	3887213	10/30/1989	780	780	8	—	—	10/30/1989	700	—	D	D	10	10	HARRISON, H.G.,
(B-20-18) 27dad	GWSI	526124	—	350514114103501	—	210399.737	3887135.099	10/30/1989	780	0-20	8	—	2,432	—	—	—	D	D	—	—	HOWARD G. HARRISON
										0-780	5	715-775									
(B-20-18) 27dbd	55	536364	—	—	—	210079.1	3887226.1	2/20/1993	780	780	6	—	—	2/20/1993	700	—	D	D	12	12	KANELOS, JAMES,
(B-20-18) 27ddb	55	527479	—	—	—	210274.3	3887018.4	6/30/1990	780	780	6	—	—	6/30/1990	680	—	D	D	10	10	SWITZER, HAROLD,A
(B-20-18) 30bdb	55	602625	—	—	—	204678.6	3888019.3	5/1/1978	700	700	6	—	—	5/1/1978	570	—	D	—	12	12	KIENER,R J
(B-20-18) 33bdb	GWSI	602625	—	350445114121601	35-60285	207859.865	3886229.199	3/30/1978	700	700	6	610-700	2,330	—	—	—	D	D	5	—	R. J. KIENER
(B-20-18) 33bdb	35	—	60285	—	—	—	—	1978	700	700	6	—	—	—	570	—	D	D	11	—	C. MILLER
(B-20-18) 33adc	GWSI	506876	—	350439114114701	—	208541.012	3886114.755	2/24/1984	695	0-630	6	605-630	2,345	—	—	—	D	D	—	—	RUBY CARTIER
										625-695	4	630-690									
(B-20-18) 33add	55	506876	—	—	—	208833.7	3886061.1	2/24/1984	695	695	6	—	—	2/24/1984	590	—	D	D	16	16	CARTIER,R
(B-20-18) 33bdb	55	583927	—	—	—	207836.5	3886298.4	—	—	—	—	—	—	—	—	—	D	—	—	—	KEN PIERCE
(B-20-18) 33caa	55	528192	—	—	—	208025.9	3885887.9	7/2/1990	680	680	6	—	—	7/2/1990	572	—	D	D	—	—	BROADHEAD, RAY,

TABLE 1. WELL INVENTORY FOR SACRAMENTO VALLEY
MOHAVE COUNTY, ARIZONA

WELL IDENTIFIER	RECORD SOURCE	ADWR 55-WELL REGISTRY NUMBER	35-WELL REGISTRY NUMBER	GWSI SITE ID	WELL NAME/ INDEX WELL	UTM COORDINATES (NAD 27) Easting (meters)	UTM COORDINATES (NAD 27) Northing (meters)	DATE COMPLETED	WELL DEPTH (feet, bls)	CASING DEPTH (feet, bls)	CASING DIAMETER (inches)	CASING PERFORATED INTERVAL (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL DATE	WATER LEVEL DEPTH (feet, bls)	WATER LEVEL ALTITUDE (feet, msl)	WELL / WATER USE	LOG TYPE	REPORTED PUMPING RATE (gpm)	REPORTED TESTING RATE (gpm)	OWNER
(B-20-18) 33dab	55	528633	---	---	---	208627.9	3885867	7/28/1990	685	685	6	---	---	7/28/1990	580	---	D	D	10	30	KRUEGER, EDWIN,G
(B-20-18) 33dba	55	556144	---	---	---	208427.2	3885873.9	11/18/1996	695	695	7	---	---	11/18/1996	580	---	D	D	---	---	FISH, GEORGE,A
(B-20-18) 33dbb	GWSI	---	---	350429114115701	---	208277.734	3885814.686	---	---	---	---	---	2,330	---	---	---	D	---	5	---	---
(B-20-18) 33dbd	55	204105	---	---	---	208422	3885672.7	---	700	700	6	---	---	---	583	---	D	D	---	---	EDWIN KRUEGER
(B-20-18) 34aac	55	543332	---	---	---	210252.9	3886413.3	4/29/1994	720	20	6	---	---	---	---	---	NONE	D	---	---	TRANSWESTERN PIPELIN,
(B-20-18) 34bab	55	512891	---	---	---	209453.6	3886642.3	---	---	---	---	---	---	---	---	---	D	---	---	---	ELDEAN, JOHN,
(B-20-18) 34bbb	55	86829	---	---	---	209050.7	3886656	3/31/1981	850	850	8	---	---	---	---	---	D, I	---	65	65	MCNICHOLAS, RALPH,J
(B-20-18) 34bbb	GWSI	86829	---	350455114112601	---	209088.904	3886590.82	---	850	---	---	---	2,375	3/20/1990	628.9	1,746	I	---	---	---	RALPH J. MCNICHOLAS
(B-20-18) 34daa	55	536000	---	---	---	210435.4	3885802.2	8/3/1992	820	820	5	---	---	8/3/1992	760	---	D, S	D	---	---	BUETOW, ROGER,
(B-20-18) 35bba	55	555215	---	---	---	210864.3	3886592.9	5/7/1996	500	280	6	---	---	---	---	---	NONE	D	---	---	ARCO PIPE LINE CO,
(B-20-19) 02daa	35	---	24797	---	---	---	---	1974	4	3	---	---	---	---	---	---	D	D	---	---	L. E. JONES
(B-20-19) 09dba	55	535290	---	---	---	199004.5	3892653.4	2/15/1993	500	500	7	---	---	2/15/1993	400	---	D	D	---	---	NEVAREZ, BARBARA,
(B-20-19) 14aba	55	573760	---	---	---	202185	3891741	7/2/1999	1,080	1,012	4	---	---	7/2/1999	1,000	---	D	D	---	---	GREGORY GRANT
(B-20-19) 14bab	55	544313	---	---	---	201582.3	3891760.5	7/3/1994	1,007	1,000	8	---	---	7/3/1994	920	---	D	D	10	10	EARLEEN BUCKMAN
(B-20-19) 14bdb	55	572559	---	---	---	201570	3891356.5	---	---	---	---	---	---	---	---	---	---	---	---	---	TRENT DRIVER
(B-20-19) 15add	55	203162	---	---	---	200961.9	3891176.4	---	980	980	6	---	---	---	479	---	D	D	---	---	JAMES D MCCLURE
(B-20-19) 16bb	55	807232	---	---	---	198064.7	3891774.7	1/1/1975	100	100	6	---	---	---	---	---	S	---	5	---	GELBAUM, DAVID,
(B-20-19) 16bbc	55	642296	---	---	---	197960.3	3891676.7	8/31/1952	275	175	6	---	---	8/31/1952	140	---	S	---	8	275	BLM-PHOENIX DISTRICT,
(B-20-19) 16bca	GWSI	642296	---	350722114183701	---	198319.393	3891478.062	---	300	---	---	---	2,750	1/1/1964	150	2,600	S	---	7	---	BLM
(B-20-19) 16bca	35	---	---	---	---	---	---	---	300	---	---	---	---	---	150	---	S	---	4	---	---
(B-20-19) 27bba	55	595799	---	---	---	199672.1	3888599.6	12/5/2002	705	705	6	---	---	12/5/2002	404	---	D	D	5	5	EDWARD & DONNA AUSTIN
(B-21-17) 06aca	55	514780	---	---	---	214737.6	3903857.8	---	---	---	---	---	---	---	---	---	D	---	---	---	COLBAUGH, MARTIN,
(B-21-17) 06aca	55	514781	---	---	---	214737.6	3903857.8	5/22/1987	460	460	6	---	---	5/22/1987	270	---	D	D	---	---	COLBAUGH, MARTIN,
(B-21-17) 06bba	55	507202	---	---	---	213939.9	3904270.2	2/13/1984	160	---	---	---	---	---	---	---	D	D	---	---	STODDARD,J
(B-21-17) 07bbb	55	503117	---	---	---	213685	3902673.4	---	---	---	---	---	---	---	---	---	D	---	---	---	PIEDRA,J
(B-21-17) 07dca	55	523483	---	---	---	214678.3	3901440.9	2/8/1989	320	20	4	---	---	2/8/1989	300	---	IND	D	---	---	SCHRITTER, BLAKE,
(B-21-17) 31adc	55	593542	---	---	---	214692.9	3895588.3	---	---	---	---	---	---	---	---	---	D	---	---	---	EDWIN K PARK III
(B-21-17) 31cda	55	520801	---	---	---	214047.7	3895002.1	1/29/1989	642	640	5	---	---	1/29/1989	480	---	D	D	---	---	VAN BRUNT, DON,
(B-21-17) 31cda	GWSI	520801	---	350930114081901	---	214094.138	3894915.772	1/29/1989	642	640	5	500-630	2,710	3/21/1990	465.9	2,244.1	U	D	---	---	DON VAN BRUNT
(B-21-17) 31cdb	55	529894	---	---	---	213844.6	3895008.3	1/10/1991	610	610	7	---	---	1/10/1991	479	---	D	D	---	---	CHUCK MC CUAIG
(B-21-17) 31cdb	55	520817	---	---	---	213844.6	3895008.3	4/8/1988	640	640	5	---	---	4/8/1988	440	---	D	D	10	---	HOLYOAK, OTTO,
(B-21-17) 31cdb	GWSI	520817	---	350930114082601	---	213916.952	3894921.368	4/8/1988	640	640	5	580-640	2,703	11/7/1995	451.7	2,251.3	D	D	---	---	ARCHIE BUNKER
(B-21-17) 31cdc	GWSI	505260	---	350927114082601	---	213914.031	3894828.907	5/22/1983	680	0-460 440-680	65	--- 580-680	2,712	---	---	---	D	D	---	---	DENZIL WOOLRIDGE
(B-21-17) 31cdd	55	505260	---	---	---	214038.1	3894801.2	5/22/1983	680	680	6	---	---	5/22/1983	450	---	D	D	10	10	WOOLRIDGE,D
(B-21-17) 31cdd	55	630871	---	---	---	214038.1	3894801.2	3/15/1967	640	640	8	---	---	3/15/1967	460	---	D	---	7	7	SHEARWOOD, CHARLES,W
(B-21-17) 31cdd	GWSI	630871	---	350923114082001	MAGOR WELL	214062.013	3894700.83	---	640	---	---	---	2,722	3/21/1990	464.1	2,258	MUN	---	---	---	SHERWOOD
(B-21-18) 05dbd	55	610756	---	---	---	206658.7	3903495.1	10/1/1975	1,365	1,350	12	---	---	10/1/1975	1,025	---	D	---	93	---	VALLEY PIONEER WATER CO
(B-21-18) 05dbd	GWSI	610756	---	351401114132401	35-32930; WELL NO. 2	206644.925	3903515.378	10/9/1975	1,350	1,350	12	1,028-1,350	2,855	11/7/1995	1,074.90	1,780	MUN	D	8	---	VALLEY PIONEER WATER CO
(B-21-18) 05dbd	35	---	32930	---	---	---	---	1975	1,350	1,350	12	---	---	---	1,011	---	D	D	85	---	VALLEY PIONEERS WATER
(B-21-18) 07bbc	55	577033	---	---	---	204023.9	3902771.5	11/17/1999	1,180	1,180	5	---	---	11/17/1999	1,025	---	I	D	---	---	KENNETH MERRILL
(B-21-18) 07bbd	55	84819	---	---	---	204224.7	3902765.4	---	---	---	---	---	---	---	---	---	D	---	---	---	PHILLIPS,C
(B-21-18) 07bbd	55	500775	---	---	---	204224.7	3902765.4	---	1,000	---	---	---	---	---	---	---	D	---	---	---	PHILLIPS,C
(B-21-18) 08aaa	GWSI	532211	---	351342114131001	WELL NO. 4	206979.975	3902918.278	7/21/1991	1,292	0-40 0-1,290	30 16	--- 1,050-1,270	2,834	7/7/1999	1,126	1,708	MUN	D	---	---	VALLEY PIONEER WATER CO
(B-21-18) 08aab	55	532211	---	---	---	206838.8	3902882.9	7/21/1991	1,292	1,290	30	---	---	7/21/1991	1,045	---	MUN	D	100	100	VALLEY PIONEER WATER CO
(B-21-18) 08bbb	55	512569	---	---	---	205635.3	3902922	10/27/1985	1,216	1,216	12	---	---	10/27/1985	1,078	---	NONE	D	120	120	VALLEY POINEER WATER CO
(B-21-18) 08bbb1	GWSI	512569	---	351343114140501	WELL N0. 3	205589.966	3902994.34	10/27/1985	1,216	1,216	12	1,006-1,216	2,820	10/26/1993	1,054.90	1,765.1	U	D	---	---	VALLEY PIONEER WATER CO
(B-21-18) 08bbb	55	86217	---	---	---	205635.3	3902922	---	---	---	---	---	---	---	---	---	D	---	---	---	VALLEY PIONEER WATER CO
(B-21-18) 08bbb	55	573000	---	---	---	205635.3	3902922	2/1/1999	1,260	1,216	12	---	---	2/1/1999	1,046	---	D	D	---	---	VALLEY PIONEER WATER CO
(B-21-18) 08bbb2	GWSI	573000	---	351342114140501	WELL NO. 3	205637.534	3902900.227	2/1/1999	1,260	1,216	12	1,000-1,216	2,820	7/7/1999	1,174.70	1,645.3	MUN	D	---	---	VALLEY PIONEER WATER CO
(B-21-18) 09add	55	530918	---	---	---	208635.6	3902221.6	---	---	---	---	---	---	---	---	---	MON	N	---	---	MAVERIK COUNTRY,
(B-21-18) 09bba	55	610757	---	---	---	207443.9	3902862.8	1/1/1963	1,518	1,518	16	---	---	1/1/1963	1,041	---	D	---	120	---	VALLEY PIONEER,
(B-21-18) 09bba	GWSI	610757	---	351340114125401	WELL NO. 1	207357.344	3902844.334	5/2/1962	1,518	0-1,160 1,150-1,404 1,404-1,476	16 14 12	1,040-1,160 1,160-1,273 ---	2,832	10/23/2003	1,062.20	1,769.8	MUN	D	---	---	VALLEY PIONEER WATER CO
(B-21-18) 09bbb	35	---	---	---	---	---	---	1962	1,518	1,476	16	---	---	---	1,035	---	D	D	---	---	SACRAMENTO VALLEY WTR
(B-21-18) 09bba	35	---	---	---	---	---	---	1962	1,518	1,040	16	---	---	---	1,025	---	D	A, D	---	---	---
(B-21-18) 10ccc	55	527481	---	---	---	208811.1	3901409.4	1/7/1991	1,410	1,220	8	---	---	1/7/1991	1,000	---	C	D	---	---	WESTERN PROGRESS CO,
(B-21-18) 17acd	55	627997	---	---	---	206572	3900677.1	---	---	---	---	---	---	---	---	---	I, S, D	---	---	---	LINGENFELTER,J G
(B-21-18) 17add	55	509632	---	---	---	206974	3900664.5	---	---	---	---	---	---	---	---	---	D	---	---	---	TEETER,J
(B-21-18) 17dca	55	627996	---	---	---	206554.3	3900072.7	---	---	---	---	---	---	---	---	---	I, D, S	---	---	---	LINGENFELTER,J G
(B-21-18) 18aca	55	802670	---	---	---	204968.5	3900929.4	---	225	10	10	---	---	---	---	---	D	---	---	---	SEEGMILLER,F W
(B-21-18) 19abb	55	642952	---	---	---	204728.2	3899726.3	9/1/1978	1,000	1,000	8	---	---	9/1/1978	890	---	I, S, D	---	15	15	VAN ROOY, PETER,
(B-21-18) 19abb	55	807884	---	---	---	204728.2	3899726.3	---	---	---	---	---	---	---	---	---	---	---	---	---	VICTORIA BOND
(B-21-18) 19abb	GWSI	---	---	351157114143301	---	204775.084	3899750.385	---	---	---	---	---	2,690	---	---	---	D	---	2	---	---
(B-21-18) 20caa	GWSI	623084	---	351132114133601	SACRAMENTO NO. 4	206164.859	3898872.056	---	1,285	---	20	1,050-1,285	2,663	11/9/1995	892.3	1,770.7	U	G, D	---	---	CYPRUS MINERAL PARK
(B-21-18) 20caa	35	---	---	---	---	---	---	1963	1,285	1,050	20	---	---	---	882	---	IND	G, D	820	---	---
(B-21-18) 20dbb	55	623084	---	---	---	206313.8	3898871.8	7/1/1963	1,285	1,285	20	---	---	7/1/1963	900	---	MIN	---	1,000	1,000	VALLEY PIONEERS WATER COM
(B-21-18) 21acc	55	577176	---	---	---	207929.3	3899020.4	2/17/2000	1,222	1,222	6	---	---	---	---	---	D	D	10	30	WILLIAM M GARNER
(B-21-18) 21bcc	GWSI	---	---	351135114125901	---	207078.746	3898934.968	1/1/1957	962	962	6	900-960	2,664	11/13/2001	895.2	1,768.8	U	D	---	---	ROY WIMBERLY
(B-21-18) 21cbc	55	582396	---	---	---	207111.6	3898643.8	8/10/2000	985	985	5	---	---	8/10/2000	870	---	D	D	---	---	FERNANDO DELA CERDA

TABLE 1. WELL INVENTORY FOR SACRAMENTO VALLEY
MOHAVE COUNTY, ARIZONA

WELL IDENTIFIER	RECORD SOURCE	ADWR 55-WELL REGISTRY NUMBER	35-WELL REGISTRY NUMBER	GWSI SITE ID	WELL NAME/ INDEX WELL	UTM COORDINATES (NAD 27) Easting (meters)	UTM COORDINATES (NAD 27) Northing (meters)	DATE COMPLETED	WELL DEPTH (feet, bls)	CASING DEPTH (feet, bls)	CASING DIAMETER (inches)	CASING PERFORATED INTERVAL (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL DATE	WATER LEVEL DEPTH (feet, bls)	WATER LEVEL ALTITUDE (feet, msl)	WELL / WATER USE	LOG TYPE	REPORTED PUMPING RATE (gpm)	REPORTED TESTING RATE (gpm)	OWNER
(B-21-18) 24bda	55	642959	---	---	---	212561.1	3899074	1/1/1979	700	260	8	---	---	1/1/1979	650	---	D	---	---	---	COLLEEN & DAVID MILLER & DAWSON & THOMPSO
(B-21-18) 24bda	35	---	69685	---	---	---	---	1979	700	260	8	---	---	---	650	---	D	D	30	---	D. MOTE
(B-21-18) 25acb	55	524215	---	---	---	212711.7	3897456.4	---	---	---	---	---	---	---	---	---	D	---	---	---	EVANS, BUCK,
(B-21-18) 25bba	55	526567	---	---	---	212120.5	3897877.3	12/10/1989	675	675	5	---	---	12/10/1989	520	---	D	D	20	20	HALL, DONALD,H
(B-21-18) 25bba	GWSI	526567	---	351104114094001	---	212136.005	3897877.865	12/10/1989	675	675	5	575-675	2,720	11/7/1995	518.8	2,201.2	D	D	---	---	DONALD H. HALL
(B-21-18) 29abb	GWSI	---	---	351104114133101	---	206212.736	3898006.598	---	912	---	8	---	2,630	4/27/1978	856	1,774	D	---	---	---	CLARK
(B-21-18) 30abb	GWSI	623082	---	351104114143601	WELL NO. 2	204924.188	3898110.248	3/27/1963	1,385	---	20 20 20	1,050-1,250 1,285-1,320 1,340-1,360	2,633	11/9/1995	857.8	1,775.2	IND	G, D	---	---	CYPRUS MINERAL PARK
(B-21-18) 30abb	35	---	---	---	---	---	---	1963	1,385	1,050	20	---	---	---	846	---	IND	D, G	1,300	---	---
(B-21-18) 30baa	55	623082	---	---	---	204476.1	3898125.3	4/1/1963	1,385	1,370	20	---	---	4/1/1963	870	---	MIN	---	1,000	1,000	VALLEY PIONEERS WATER COM
(B-21-18) 30caa	55	203875	---	---	---	204449.9	3897320.6	---	950	950	6	---	---	---	853	---	D	D	7	7	JOHN ALBERT & E CASTLE
(B-21-18) 32bbb	55	623083	---	---	---	205429.9	3896480.1	5/1/1963	1,355	1,297	20	---	---	5/1/1963	820	---	MIN	---	1,000	1,000	VALLEY PIONEERS WATER COM
(B-21-18) 32bbb	GWSI	623083	---	351008114140401	WELL N0. 3-C	205399.399	3896366.941	5/23/1963	1,355	---	20	1,050-1,214	2,578	11/9/1995	808.7	1,769.3	IND	G,D	---	---	CYPRUS MINERAL PARK
(B-21-18) 32bbb	35	---	---	---	---	---	---	1963	1,355	1,050	20	---	---	---	804	---	IND	D, G	975	---	---
(B-21-18) 32dcc	55	623081	---	---	---	206190	3895048.4	8/1/1960	1,350	1,325	20	---	---	8/1/1960	755	---	MIN	---	1,000	1,000	VALLEY PIONEERS WATER COM
(B-21-18) 32dcc	GWSI	623081	---	350927114132701	WELL NO. 1-D	206294.862	3895072.844	8/30/1960	1,265	---	20	775-1,120	2,531	11/9/1995	763.7	1,767.3	U	D	---	---	CYPRUS MINERAL PARK
(B-21-18) 32dcc	35	---	---	---	---	---	---	1960	1,350	775	16	---	---	---	756	---	IND	D, G	684	---	---
(B-21-18) 33ccc	55	561518	---	---	---	206995.3	3895024.3	4/12/1997	890	890	7	---	---	4/12/1997	761	---	D	D	---	---	GINEST, RICHARD,W
(B-21-18) 34dba	M&A	901789	---	---	GV-1	209736.3272	3895622.723	6/28/2005	1,320	40 1,309	30 18	799-1,119 1,139-1,199 1,219-1,299	2,559	6/10/2005	764.71	1,794	MUN	G	---	2,020	AZTEC 80
(B-21-18) 35bbc	55	589812	---	---	---	210256.7	3896124.4	2/25/2002	800	800	5	---	---	2/25/2002	509	---	D	D	10	10	MICHAEL S WRIGHT SR
(B-21-19) 01ddd	55	523964	---	---	---	203836.8	3903182.8	10/27/1989	1,250	1,250	10	---	---	10/27/1989	1,035	---	D	D	100	100	SUN CAPITAL INC,
(B-21-19) 01ddd	GWSI	523964	---	351344114151501	WELL NO. 4	203820.59	3903083.053	10/27/1989	1,250	1,250	10	1,050-1,230	2,818	11/7/1995	1,041	1,777	MUN	D	---	---	GOLDEN VALLEY IMPROVEMENT DIST.
(B-21-19) 02ddd	GWSI	515669	---	351345114161601	WELL NO. 3	202278.837	3903164.606	12/30/1986	1,251	1,251	8	1,050-1,150 1,170-1,190 1,210-1,230	2,803	11/6/1995	1,021.1	1,781.9	MUN	D	---	---	GOLDEN VALLEY IMPROVEMENT DIST.
(B-17-19) 02ddd	55	515669	---	---		201726.3	3864577.4	12/30/1986	1,251	1,251	8	---	---	12/30/1986	1,030.0	---	SUB	D	31	31	SUN CAPITAL INC.,
(B-21-19) 08bbc	35	---	---	---	---	---	---	1943	195	195	20	---	---	---	103	---	D	---	5	---	AMER T AND T CO
(B-21-19) 08bbd	GWSI	---	---	351329114201601	---	196171.125	3902997.755	---	195	---	---	---	3,090	2/29/1964	103	2,987	C	D	---	---	---
(B-21-19) 10aca	55	500967	---	---	---	200193.1	3902694.4	---	1,100	---	---	---	---	---	---	---	MUN	---	---	---	GOLDEN VALLEY IMP DS,
(B-21-19) 11	55	649260	---	---	---	201491.6	3902350.4	---	1,150	---	8	---	---	---	---	---	I	---	15	15	J & W PLUMBING INC,
(B-21-19) 11adc	55	87395	---	---	---	201996.5	3902435.6	---	---	---	---	---	---	---	---	---	D	---	---	---	WHYMAN,J
(B-21-19) 11dab	55	86732	---	---	---	201990.3	3902234.3	---	---	---	---	---	---	---	---	---	D	---	---	---	J & W PLUMBING CONT,
(B-21-19) 12aaa	55	524476	---	---	---	203829.2	3902980.9	---	---	---	---	---	---	---	---	---	D	---	---	---	AFKHAMI, NARIMAN,
(B-21-19) 12aba	55	524667	---	---	---	203425.4	3902993.9	---	---	---	---	---	---	---	---	---	D	---	---	---	AFKHAMI, NARIMAN,
(B-21-19) 12aca	55	500968	---	---	---	203411.6	3902591.1	---	1,100	---	---	---	---	---	---	---	MUN	---	---	---	GOLDEN VALLEY IMP DS,
(B-21-19) 12adb	55	524666	---	---	---	203612.8	3902584.7	---	---	---	---	---	---	---	---	---	D	---	---	---	AFKHAMI, NARIMAN,
(B-21-19) 13ddd	55	530666	---	---	---	203726.3	3899959.8	5/31/1991	1,505	1,505	30	---	---	5/31/1991	950	---	UTIL	D	650	689	GOLDEN VALLEY COUNTY,
(B-21-19) 13ddd	GWSI	530666	---	351200114151301	WELL NO.1	203766.096	3899875.955	5/1/1991	1,505	0-40 0-1,340	30 16	--- 900-1,330	2,694	7/16/1999	928.8	1,765	MUN	D	1	---	GVCID#1
(B-21-19) 15abb	55	514201	---	---	---	199953.6	3901490.8	---	525	20	10	---	---	---	---	---	D	D	---	---	CAPLES, JAMES,
(B-21-19) 15cbb	55	529357	---	---	---	199122.2	3900711.1	---	---	---	---	---	---	---	---	---	I	---	---	---	BROWN, WILLARD,R
(B-21-19) 21bbc	55	535220	---	---	---	197475.5	3899759	---	242	242	---	---	---	---	---	---	D	D	---	---	JOHNSON, DONALD,
(B-21-19) 21ddc	55	570648	---	---	---	198644.9	3898514.3	12/30/1998	700	20	7	---	---	---	---	---	D	D	---	---	BILLY L MASON
(B-21-19) 23dca	55	538389	---	---	---	201669.7	3898617.1	---	---	---	---	---	---	---	---	---	D, I	---	---	---	LEHRKAMP, MILBERT,W
(B-21-19) 23dca	55	534770	---	---	---	201669.7	3898617.1	---	---	---	---	---	---	---	---	---	D	---	---	---	LEHRKAMP, MILBERT,W
(B-21-19) 25aaa	GWSI	530665	---	351105114151301	WELL NO. 2	203710.558	3898180.775	6/15/1991	1,226	0-40 0-1,220	30 16	--- 860-1,210	2,634	7/16/1999	863.1	1,771	MUN	D	---	---	GVCID #1
(B-21-19) 25bbb	55	530665	---	---	---	202259	3898195.5	6/15/1991	1,226	1,220	30	---	---	6/15/1991	866	---	UTIL	D	650	704	GOLDEN VALLEY COUNTY,
(B-21-19) 29bdb	55	575665	---	---	---	196210.8	3897987.3	7/20/1999	265	265	4	---	---	7/20/1999	60	---	D	D	---	---	RICKEY BOSSERT
(B-21-19) 29bdd	55	599047	---	---	---	196406	3897780.2	---	---	---	---	---	---	---	---	---	D	---	---	---	TERRY POTTER
(B-21-19) 29cac	55	571688	---	---	---	196193.1	3897384.3	1/8/1999	160	160	6	---	---	1/8/1999	87	---	D	D	10	10	RALPH ARNOLD
(B-21-19) 29cac	55	597848	---	---	---	196193.1	3897384.3	---	---	---	---	---	---	---	---	---	D	---	---	---	TOMMY BACA
(B-21-19) 29cac	55	203532	---	---	---	196193.1	3897384.3	5/26/2004	405	405	6	---	---	5/26/2004	150	---	D	D	---	---	CHARLES MCDANIEL
(B-21-19) 29cca	55	574900	---	---	---	195985.8	3897189	6/28/1999	300	300	4	---	---	6/28/1999	270	---	D	D	---	---	VIRGINIA YATES
(B-21-19) 29cdc	55	528992	---	---	---	196181.3	3896981.9	11/5/1990	160	160	7	---	---	11/5/1990	90	---	D, S, I	D	10	10	COTTER, RICHARD,
(B-21-19) 29dad	55	580495	---	---	---	197199.6	3897354.6	4/8/2000	400	400	5	---	---	4/8/2000	90	---	D	D	---	---	DON FRANCISCOTTY
(B-21-19) 29dbc	55	582241	---	---	---	196595.7	3897372.4	---	---	---	---	---	---	---	---	---	D	---	---	---	JOHN L NEELY
(B-21-19) 29dbc	55	204303	---	---	---	196595.7	3897372.4	---	440	440	7	---	---	---	---	---	D	D	---	---	JOHN L NEELY
(B-21-19) 29dca	55	201089	---	---	---	196791.5	3897165.6	---	530	530	6	---	---	---	270	---	D	D	---	---	A CYRUS EUTSEY JR
(B-21-19) 29dcc	55	200496	---	---	---	196584.4	3896970.3	---	780	180	6	---	---	---	47	---	D	D	2	4	KARL O LUDWIG
(B-21-19) 29ddb	55	548207	---	---	---	196992.9	3897159.8	3/9/1995	400	400	7	---	---	3/9/1995	180	---	D	D	---	---	JOHN C ASHWORTH
(B-21-19) 29ddd	55	568348	---	---	---	197188.6	3896952.8	6/23/1998	707	707	5	---	---	6/23/1998	450	---	D	D	7	7	GILBERT E AND S ROMAN
(B-21-19) 33baa	55	576277	---	---	---	197986.4	3896727	8/3/1999	245	245	5	---	---	8/3/1999	200	---	D	D	---	---	DAVID M HAMILTON
(B-21-19) 33bba	55	585144	---	---	---	197584.5	3896738.8	1/24/2001	505	505	5	---	---	1/24/2001	380	---	D	D	---	---	PAULA RICHOUD
(B-21-19) 33bbc	55	552593	---	---	---	197377	3896543.1	---	---	---	---	---	---	---	---	---	D	---	---	---	MARK SIMPSON
(B-21-19) 33bbc	55	566077	---	---	---	197377	3896543.1	---	---	---	---	---	---	---	---	---	D	---	---	---	MARK SIMPSON
(B-21-19) 33bbc	55	573257	---	---	---	197377	3896543.1	6/10/1999	400	400	4	---	---	6/10/1999	260	---	D	D	10	6	MARK SIMPSON
(B-21-19) 33bbc	55	580764	---	---	---	197377	3896543.1	4/20/2000	265	265	5	---	---	4/20/2000	86	---	D	D	10	6	PATRICK J HUMPHREYS

TABLE 1. WELL INVENTORY FOR SACRAMENTO VALLEY
MOHAVE COUNTY, ARIZONA

WELL IDENTIFIER	RECORD SOURCE	ADWR 55-WELL REGISTRY NUMBER	35-WELL REGISTRY NUMBER	GWSI SITE ID	WELL NAME/ INDEX WELL	UTM COORDINATES (NAD 27) Easting (meters)	UTM COORDINATES (NAD 27) Northing (meters)	DATE COMPLETED	WELL DEPTH (feet, bls)	CASING DEPTH (feet, bls)	CASING DIAMETER (inches)	CASING PERFORATED INTERVAL (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL DATE	WATER LEVEL DEPTH (feet, bls)	WATER LEVEL ALTITUDE (feet, msl)	WELL / WATER USE	LOG TYPE	REPORTED PUMPING RATE (gpm)	REPORTED TESTING RATE (gpm)	OWNER
(B-21-19) 33bbd	55	558276	—	—	—	197578	3896537.1	—	—	—	—	—	—	—	—	—	D	—	—	—	MOORE, DOUGLAS,B
(B-21-19) 33bcb	55	579196	—	—	—	197370.5	3896342.1	2/25/2000	400	400	5	—	—	2/25/2000	145	—	D	D	8	4	CHRISTOPHER R CARLSON
(B-21-19) 33bcb	55	599773	—	—	—	197370.5	3896342.1	—	—	—	—	—	—	—	—	—	D	—	—	—	STEVE LAPRADE
(B-21-19) 33bcc	55	505637	—	—	—	197364	3896141.1	10/20/1983	525	—	—	—	—	—	—	—	D	D	—	—	LOUREY,J
(B-21-19) 33cab	55	578655	—	—	—	197759.5	3895927.4	1/21/2000	405	405	5	—	—	1/21/2000	200	—	D	D	—	—	STRITTMATTER & BECK
(B-21-19) 33cac	55	512178	—	—	—	197753.1	3895726.3	9/25/1985	250	250	7	—	—	9/25/1985	200	—	D	D	—	—	KLOOSTERMAN,J
(B-21-19) 33cac	35	—	82386	—	—	—	—	1979	295	295	4	—	—	—	200	—	D	D	1	—	R. W. PRICE
(B-21-19) 33cbd	55	534212	—	—	—	197552.3	3895732.8	6/25/1992	245	245	7	—	—	6/25/1992	124	—	D	D	5	5	ROMERO, JOHN,A
(B-21-19) 33cbd	55	808567	—	—	—	197552.3	3895732.8	—	200	—	4	—	—	—	160	—	D	—	5	—	FRANK & SHARON DOWHAN
(B-21-19) 33ccb	55	565776	—	—	—	197344.6	3895538.3	—	440	440	7	—	—	—	240	—	D	D	—	—	RICHARD & SUSAN WAITMAN
(B-21-19) 33ccd	55	648871	—	—	—	197539.5	3895330	1/1/1978	240	240	6	—	—	1/1/1978	160	—	D	—	15	15	REGINA GRIFFITH
(B-21-19) 33ccd	35	—	59304	—	—	—	—	1978	240	240	6	—	—	—	160	—	D	D	10	—	E. HALVERSON
(B-21-19) 33cda	35	—	82263	—	—	—	—	1979	460	460	4	—	—	—	330	—	D	D	1	—	B. A. PORTMAN
(B-21-19) 33cdb	55	629964	—	—	—	197746.6	3895525.1	9/16/1979	325	325	6	—	—	9/16/1979	200	—	D	—	10	10	HEIN,L W
(B-21-19) 33cdb	GWSI	629964	—	350930114190401	35-81951	197767.266	3895446.051	9/15/1979	325	325	4	250-325	2,928	3/23/1990	246.4	2,682	D, I	D	—	—	LOUIS W. HEIN
(B-21-19) 33cdb	35	—	81951	—	—	—	—	1979	325	325	4	—	—	—	200	—	D	D	10	—	L. W. HEIN
(B-21-19) 33cdb	55	808625	—	—	—	197746.6	3895525.1	—	350	350	7	—	—	—	215	—	D	—	3	—	LINDA M WILLS
(B-21-19) 33dda	55	572211	—	—	—	198750.4	3895492	1/15/1999	420	420	7	—	—	1/15/1999	300	—	D	D	—	—	WILMER M. REIERSON
(B-21-19) 34cbc	55	518964	—	—	—	198959.5	3895685.4	—	—	—	—	—	—	—	—	—	D	—	—	—	DUTCH, FREDERICK,R
(B-21-19) 34cbc	GWSI	518964	—	350935114181901	—	198911.507	3895562.206	—	380	—	4	—	2,819	3/23/1990	320.4	2,498.6	D	—	—	—	FRED DUTCH
(B-21-19) 34ccc	55	86818	—	—	—	198946.1	3895281.5	2/12/1981	385	385	4	—	—	—	—	—	D	—	8	8	FENNEL,R
(B-22-18) 02aaa	GWSI	—	—	351941114094601	—	212294.295	3913946.775	—	—	—	—	—	3,660	2/27/1979	15.82	3,644	D	—	—	—	—
(B-22-18) 02aaa	35	—	—	—	—	—	—	—	—	—	—	—	—	—	17	—	D	—	—	—	—
(B-22-18) 03aad	GWSI	—	—	351942114105901	—	210649.469	3913906.962	—	700	—	—	—	3,505	—	—	—	U	—	—	—	—
(B-22-18) 03aad	35	—	—	—	—	—	—	—	700	—	16	—	—	—	—	—	K	—	—	—	—
(B-22-18) 04bbb	GWSI	805092	—	351942114130901	CHRISTMAS TREE NO. 3	207569.783	3914068.236	11/16/1968	2,510	2,508	14	1,848-2,498	3,345	11/9/1995	1,207.3	2,137.7	S	D	—	—	EL PASO NAT GAS CO
(B-22-18) 05aad	55	805092	—	—	—	207406.1	3914022.6	11/16/1968	2,510	2,508	14	—	—	11/16/1968	1,332	—	MIN	D	75	75	TSC ENT. INC.,
(B-22-18) 05aad	35	—	—	—	—	—	—	1968	2,510	2,508	14	—	—	—	1,332	—	I	D	75	—	EL PASO NATURAL GAS
(B-22-18) 05dac	GWSI	805094	—	351914114132801	CHRISTMAS TREE NO. 4	207110.274	3913157.556	1/22/1969	2,437	2,435	8	1,525-2,425	3,285	11/9/1995	1,194.3	2,090.7	U	D, G	—	—	TSC ENT
(B-22-18) 05dbc	55	805094	—	—	—	206774.9	3913189.6	1/22/1969	2,437	2,435	9	—	—	1/22/1969	1,220	—	MIN	D	150	150	TSC ENT INC,
(B-22-18) 05dbc	35	—	—	—	—	—	—	1969	2,437	2,435	9	—	—	—	1,220	—	I	D	150	—	EL PASO NATURAL GAS
(B-22-18) 23ddd	55	502988	—	—	—	212032	3907750	6/18/1982	187	187	4	—	—	6/18/1982	40	—	D, MIN	D	—	—	GIFFORD,R U
(B-22-18) 27	55	534477	—	—	—	209687.3	3906919.8	—	—	—	—	—	—	—	—	—	NONE	—	—	—	TSC ENTERPRISES,
(B-22-18) 35dbb	55	547440	—	—	—	211345.2	3905151.8	2/3/1995	120	120	4	—	—	2/3/1995	52	—	MON	D	—	—	CYPRUS COPPER CO,
(B-22-18) 35dbb	55	547442	—	—	—	211345.2	3905151.8	2/1/1995	300	20	6	—	—	2/1/1995	98	—	MON	D	—	—	CYPRUS COPPER CO,
(B-22-18) 35dbb	55	547444	—	—	—	211345.2	3905151.8	2/4/1995	300	20	6	—	—	2/4/1995	117	—	MON	D	—	—	CYPRUS COPPER CO,
(B-22-18) 35dbb	55	547446	—	—	—	211345.2	3905151.8	—	—	—	—	—	—	—	—	—	MON	—	—	—	CYPRUS COPPER CO,
(B-22-18) 35dbb	55	547447	—	—	—	211345.2	3905151.8	—	—	—	—	—	—	—	—	—	MON	—	—	—	CYPRUS COPPER CO,
(B-22-18) 35dbb	55	547439	—	—	—	211345.2	3905151.8	2/3/1995	140	20	6	—	—	2/3/1995	27	—	MON	D	—	—	CYPRUS COPPER CO,
(B-22-18) 35dbb	55	547441	—	—	—	211345.2	3905151.8	2/1/1995	100	20	6	—	—	2/1/1995	44	—	MON	D	—	—	CYPRUS COPPER CO,
(B-22-18) 35dbb	55	547443	—	—	—	211345.2	3905151.8	1/27/1995	300	95	6	—	—	—	—	—	MON	D	—	—	CYPRUS COPPER CO,
(B-22-18) 35dbb	55	547445	—	—	—	211345.2	3905151.8	—	—	—	—	—	—	—	—	—	MON	—	—	—	CYPRUS COPPER CO,
(B-22-18) 35dbb	55	547448	—	—	—	211345.2	3905151.8	—	—	—	—	—	—	—	—	—	MON	—	—	—	CYPRUS COPPER CO,
(B-22-18) 35dc	55	547637	—	—	—	211430	3904645.1	3/2/1995	137	134	4	—	—	—	—	—	MON	D	—	—	CYPRUS COPPER CO,
(B-22-19) 01abc	55	558275	—	—	—	203595.5	3914140.1	—	—	—	—	—	—	—	—	—	D	—	—	—	CHILDERS,,H
(B-22-19) 14dca	55	596884	—	—	—	202034.3	3909889.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(B-22-19) 14dca	55	596883	—	—	—	202034.3	3909889.9	—	—	—	—	—	—	—	—	—	D	—	—	—	HARDY PROPERTIES
(B-22-19) 15dca	55	584852	—	—	—	200431.1	3909942.6	4/21/2001	560	20	7	—	—	—	—	—	D	D	—	—	WALTER FRANCIS
(B-22-19) 25bac	55	523475	—	—	—	202965.5	3907634.9	—	—	—	—	—	—	—	—	—	D	—	—	—	WILLIAMS, CHARLES,
(B-22-19) 25bac	55	527108	—	—	—	202965.5	3907634.9	10/1/1990	870	830	5	—	—	10/1/1990	790	—	D	D	—	—	WILLIAMS, CHARLES,M
(B-22-19) 27bbd	55	532982	—	—	—	199550.8	3907752	—	—	—	—	—	—	—	—	—	D	—	—	—	ELSER, NICK,A
(B-22-19) 30dbb	35	—	—	—	—	—	—	—	30	—	—	—	—	—	—	—	S	—	2	—	—
(B-22-19) 31aaa	55	517724	—	—	—	195881.3	3906467.4	5/6/1987	165	165	6	—	—	5/6/1987	65	—	D	D	5	5	KIBBEE, AL,
(B-22-19) 31aab1	GWSI	517724	—	351523114203901	—	195728.999	3906406.975	5/6/1987	165	0-20	6	—	3,180	3/23/1990	72	3,108	D	D	—	—	AL KIBBEE
										0-165	5	85-165									
(B-22-19) 31aab	55	524039	—	—	—	195680.5	3906474.4	5/27/1989	220	209	7	—	—	5/27/1989	95	—	D	D	3	3	BEATTIE, F.S,
(B-22-19) 31aab2	GWSI	524039	—	351526114204301	—	195630.985	3906502.855	5/27/1989	220	0-20	7	—	3,182	—	—	—	D	D	—	—	FRED BEATTIE
										0-209	4	140-209									
(B-22-19) 31dcd	55	589924	—	—	—	195430.9	3905069.7	—	505	505	5	—	—	—	127	—	D	D	—	—	SHIRLEY REAY
(B-22-19) 33ccc	55	523482	—	—	—	197645.6	3904994.2	—	—	—	—	—	—	—	—	—	D	—	—	—	ACKER, ALEXANDER,R
(B-22-19) 35ddd	55	524881	—	—	—	202272	3904844.8	7/13/1989	60	—	—	—	—	—	—	—	D	D	—	—	STEPP, SAM,
(B-23-18) 03adb	35	—	—	—	—	—	—	1961	145	—	8	—	—	—	115	—	MUN	D	15	—	—
(B-23-18) 03bca	35	—	—	—	—	—	—	1959	210	—	10	—	—	—	—	—	MUN	—	15	—	—
(B-23-18) 03cbb	35	—	—	—	—	—	—	1958	104	—	8	—	—	—	80	—	MUN	—	15	—	—
(B-23-18) 04aac	35	—	—	—	—	—	—	—	78	—	—	—	—	—	30	—	MUN	—	15	—	—
(B-23-18) 04ada	35	—	—	—	—	—	—	1966	256	—	—	—	—	—	70	—	MUN	—	15	—	—
(B-23-18) 05bdc	GWSI	—	—	352444114133801	—	206936.976	3923345.206	—	30	—	—	—	3,830	—	—	—	S	—	—	—	—
(B-23-18) 05bdc	35	—	—	—	—	—	—	—	30	—	—	—	—	—	—	—	S	—	—	—	—
(B-23-18) 05c	55	525037	—	—	—	206513.8	3922895.5	8/31/1989	—	—	—	—	—	—	—	—	NONE	D	—	—	CYPRUS GOLD DIV,
(B-23-18) 05cac	55	805375	—	—	—	206619.1	3922994.6	12/30/1978	125	125	6	—	—	12/30/1978	25	—	S	—	20	—	BLM-PHOENIX DISTRICT,
(B-23-18) 05cac	55	805392	—	—	—	206619.1	3922994.6	12/31/1978	150	150	8	—	—	12/31/1978	45	—	S	—	15	—	BLM-PHOENIX DISTRICT,
(B-23-18) 06adb	35	—	—	—	—	—	—	1969	300	300	8	—	—	—	225	—	D	D	10	—	E. COLLINS

TABLE 1. WELL INVENTORY FOR SACRAMENTO VALLEY
MOHAVE COUNTY, ARIZONA

WELL IDENTIFIER	RECORD SOURCE	ADWR 55-WELL REGISTRY NUMBER	35-WELL REGISTRY NUMBER	GWSI SITE ID	WELL NAME/ INDEX WELL	UTM COORDINATES (NAD 27) Easting (meters)	UTM COORDINATES (NAD 27) Northing (meters)	DATE COMPLETED	WELL DEPTH (feet, bls)	CASING DEPTH (feet, bls)	CASING DIAMETER (inches)	CASING PERFORATED INTERVAL (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL DATE	WATER LEVEL DEPTH (feet, bls)	WATER LEVEL ALTITUDE (feet, msl)	WELL / WATER USE	LOG TYPE	REPORTED PUMPING RATE (gpm)	REPORTED TESTING RATE (gpm)	OWNER
(B-23-18) 09	55	519560	—	—	—	208525.5	3921620.4	1/27/1988	400	—	6	—	—	—	—	—	NONE	D	—	—	OTAGO PRESS,
(B-23-18) 09aad	GWSI	—	—	352408114120601	—	209222.509	3922160.076	—	104	—	—	—	3,900	10/1/1965	61	3,839	U	—	—	—	CHLORIDE WATER CORP
(B-23-18) 09aad	35	—	—	—	—	—	—	1965	104	—	10	—	—	—	61	—	K	D	1	—	—
(B-23-18) 09ab	55	805131	—	—	—	208727.8	3922216.3	10/10/1949	80	80	3	—	—	10/10/1949	10	—	S	—	25	—	PENDLEY, LAURA,L
(B-23-18) 09abd	35	—	—	—	—	—	—	—	70	—	—	—	—	—	—	—	S	—	5	—	—
(B-23-18) 09abd1	GWSI	—	—	352357114121201	—	208766.248	3922113.165	—	70	—	6	—	3,844	3/22/1990	34	3,810	U	—	—	—	—
(B-23-18) 09abd2	GWSI	—	—	352406114122501	—	208741.011	3922113.984	—	—	—	6	—	3,844	3/22/1990	33	3,811	U	—	—	—	—
(B-23-18) 09bcc1	GWSI	—	—	352333114124101	—	207896.154	3921771.193	—	49	25	10	—	3,759	3/22/1990	19.81	3,739.19	U	—	—	—	DON SMITH
(B-23-18) 09cba	35	—	—	—	—	—	—	—	49	25	10	—	—	—	35	—	S	—	—	—	—
(B-23-18) 09bcc2	GWSI	—	—	352356114125701	—	207923.398	3921832.016	—	—	—	6	—	3,759	3/22/1990	18.52	3,740	U	—	—	—	—
(B-23-18) 10	55	519556	—	—	—	210140.6	3921555.5	2/12/1988	55	—	6	—	—	—	—	—	NONE	D	—	—	OTAGO PRESS,
(B-23-18) 10	55	519558	—	—	—	210140.6	3921555.5	1/21/1988	350	—	6	—	—	—	—	—	NONE	D	—	—	OTAGO PRESS,
(B-23-18) 10	55	519563	—	—	—	210140.6	3921555.5	1/23/1988	65	—	6	—	—	—	—	—	NONE	D	—	—	OTAGO PRESS,
(B-23-18) 10	55	519555	—	—	—	210140.6	3921555.5	1/11/1988	250	—	6	—	—	—	—	—	NONE	D	—	—	OTAGO PRESS,
(B-23-18) 10	55	519557	—	—	—	210140.6	3921555.5	1/20/1988	400	—	6	—	—	—	—	—	NONE	D	—	—	OTAGO PRESS,
(B-23-18) 10dcc	GWSI	—	—	352329114112601	—	210193.161	3920925.38	—	264	—	—	—	3,870	—	—	—	IND	—	—	—	—
(B-23-18) 10dcc	35	—	—	—	—	—	—	1966	264	—	—	—	—	—	—	—	IND	—	—	—	—
(B-23-18) 15	55	519562	—	—	—	210095.5	3919934.6	1/26/1988	—	—	6	—	—	—	—	—	NONE	D	—	—	OTAGO PRESS,
(B-23-18) 15acb	55	805393	—	—	—	210212.9	3920232.9	12/31/1963	150	150	8	—	—	12/31/1963	35	—	S	—	20	—	BLM-PHOENIX DISTRICT,
(B-23-18) 15acb	GWSI	805393	—	352307114112301	—	210246.997	3920244.863	6/16/1966	170	133	8	83-133	3,850	6/18/1966	72	3,778	U	G, D	—	—	BLM
(B-23-18) 15acb	35	—	—	—	—	—	—	1966	170	133	8	—	—	—	95	—	I	G, D	100	—	EL PASO NATURAL GAS
(B-23-18) 15baa	55	806012	—	—	—	210025.7	3920646.4	12/31/1963	125	126	10	—	—	12/31/1963	331	—	S	—	20	—	BLM-PHOENIX DISTRICT,
(B-23-18) 15baa	GWSI	806012	—	352318114113001	EMERALD ISLAND NO. 2	210081.252	3920589.604	6/15/1966	200	142	10	120-142	3,830	5/1/1966	110	3,720	U	D, G	4	—	BLM
(B-23-18) 15baa	35	—	—	—	—	—	—	1966	200	140	10	—	—	—	70	—	I	G, D	70	—	EL PASO NATURAL GAS
(B-23-18) 19dda	55	650415	—	—	—	205887.3	3917949.2	—	—	—	—	—	—	—	—	—	—	—	—	—	WILCOX,A L
(B-23-18) 21bcb	55	500707	—	—	—	207731.2	3918704.7	1/1/1981	500	8	8	—	—	—	—	—	D	D	—	—	MELBOURN,H R
(B-23-18) 22	55	901318	—	—	—	210046.6	3918305.9	—	—	—	—	—	—	—	—	—	NONE	—	—	—	SGV RESOURCES INC,
(B-23-18) 22	GWSI	—	—	352200114113001	—	210003.637	3918185.528	—	225	—	—	—	3,700	3/1/1963	77	3,623	—	—	—	—	—
(B-23-18) 22	35	—	—	—	—	—	—	—	225	—	—	—	—	—	77	—	—	—	—	—	—
(B-23-18) 22cdb	55	528928	—	—	—	209726.7	3917816.8	5/29/1991	400	390	8	—	—	5/29/1991	380	—	MON	D	—	—	ARIMETCO INC,
(B-23-18) 22cdc	55	528927	—	—	—	209720.3	3917613.7	12/16/1991	645	592	8	—	—	12/16/1991	560	—	MON	D	—	—	ARIMETCO INC,
(B-23-18) 22cdd	55	805570	—	—	—	209921.1	3917600.1	12/31/1973	260	10	10	—	—	12/31/1973	230	—	IND	—	5	—	ARIMETCO, INC.,
(B-23-18) 22cdd	55	805571	—	—	—	209921.1	3917600.1	12/31/1973	350	70	8	—	—	12/31/1973	240	—	IND	—	5	—	ARIMETCO, INC.,
(B-23-18) 22da	55	642231	—	—	—	210640.5	3918067.2	—	—	—	—	—	—	—	—	—	S	—	—	—	BUREAU OF LAND MANAGEMENT
(B-23-18) 22dca	55	533821	—	—	—	210329.2	3917778.5	12/2/1991	124	120	8	—	—	12/2/1991	40	—	MON	D	—	—	TSC ENTERPRISES INC,
(B-23-18) 22dcb	55	553491	—	—	—	210128.4	3917791.3	—	—	—	—	—	—	—	—	—	NONE	—	—	—	ARIMETCO,
(B-23-18) 23bcd	GWSI	—	—	352158114103501	—	211219.487	3918269.78	—	150	—	—	—	3,900	3/6/1979	33.25	3,866.75	S	—	—	—	—
(B-23-18) 23bcd	35	—	—	—	—	—	—	—	150	—	6	—	—	—	90	—	S	—	5	—	—
(B-23-18) 26aad	55	551145	—	—	—	212317.9	3917123.5	8/16/1995	200	20	6	—	—	8/16/1995	22	—	MON	D	—	—	CYPRUS MINERAL PARK,
(B-23-18) 27acd	55	581718	—	—	—	210306.4	3916773.6	7/17/2000	155	120	4	—	—	7/17/2000	70	—	D	D	—	—	LAUREL WREATH LIVING TRUS
(B-23-18) 27ada	GWSI	—	—	352114114105501	—	210841.692	3916739.269	—	350	—	—	—	3,720	—	—	—	IND	—	—	—	—
(B-23-18) 27ada	35	—	—	—	—	—	—	—	350	—	—	—	—	—	—	—	IND	—	30	—	—
(B-23-18) 27bad	55	805569	—	—	—	209910.6	3917197.4	12/31/1960	305	—	8	—	—	12/31/1960	70	—	IND	—	5	—	ARIMETCO, INC.,
(B-23-18) 27bbb	55	566991	—	—	—	209310.3	3917438.9	5/8/1998	260	260	7	—	—	5/8/1998	155	—	D	D	—	—	DONALD L DOLEZAL
(B-23-18) 27caa	55	503679	—	—	—	209902.2	3916597.8	8/2/1982	250	250	6	—	—	8/2/1982	250	—	D	D	10	10	CASLER,J W
(B-23-18) 27cba	55	530495	—	—	—	209500.9	3916620.8	—	—	—	—	—	—	—	—	—	D, i	—	—	—	MAGUIRE, KATHERENE,
(B-23-18) 27cbd	55	539378	—	—	—	209498.3	3916419.8	8/30/1993	645	645	7	—	—	—	—	—	D	D	—	—	MAGUIRE, KATHY,
(B-23-18) 27daa	55	551146	—	—	—	210705.3	3916551.8	8/17/1995	70	70	6	—	—	—	—	—	MON	D	—	—	LAUREL WREATH LIVING TRUST
(B-23-18) 27dcd	55	557175	—	—	—	210294.5	3915977.9	5/14/1996	365	—	7	—	—	5/14/1996	230	—	D	D	—	—	CASTRO, TED,J
(B-23-18) 33cbc1	GWSI	—	—	352007114125501	—	207696.861	3914866.314	1/1/1957	1,357	—	7	—	3,390	11/9/1995	919.3	2,470.7	U	G	—	—	R. A. BROMAGHIM
								1/1/1968													
(B-23-18) 33cbc	35	—	—	—	—	—	—	12/3/1902	1,357	—	—	—	—	—	—	—	K	8	—	—	—
(B-23-18) 32dad	55	805093	—	—	—	207454.4	3914855	8/12/1968	2,132	2,120	8	—	—	8/12/1968	1,225	—	MIN	D	192	192	TSC ENT. INC.,
(B-23-18) 32dad	35	—	—	—	—	—	—	1968	2,132	2,120	9	—	—	—	1,225	—	I	D	192	—	EL PASO NATURAL GAS
(B-23-18) 33cbc2	GWSI	805093	—	352009114130601	CHRISTMAS TREE NO.2	207594.829	3914838.776	8/12/1968	2,132	2,120	8	1,560-2,110	3,380	11/9/1995	1,235.5	2,144.5	U	G, D	—	—	EL PASO NAT GAS CO
(B-23-18) 34	55	637354	—	—	—	209974.7	3915090.7	—	—	—	—	—	—	—	—	—	D	—	—	—	KILMAN,M J
(B-23-18) 34adc	GWSI	—	—	352020114110701	—	210485.088	3915084.671	—	—	—	—	—	3,576	5/1/1965	240	3,336	U	—	1	—	—
(B-23-18) 34adc	35	—	—	—	—	—	—	1965	—	—	—	—	—	—	240	—	K	—	—	—	—
(B-23-18) 34bdd	GWSI	—	—	352020114120101	—	209121.243	3915128.676	—	320	—	—	—	3,520	—	—	—	U	—	—	—	CHLORIDE WATER CORP
(B-23-18) 34bdd	35	—	—	—	—	—	—	1967	320	—	6	—	—	—	46	—	K	—	—	—	—
(B-23-18) 35	55	545382	—	—	—	211568	3915035.6	9/13/1994	35	—	—	—	—	—	—	—	NONE	D	—	—	MOHAVE COUNTY,
(B-23-18) 35aca	55	551147	—	—	—	211872.6	3915325.7	8/18/1995	51	51	6	—	—	8/18/1995	22	—	MON	D	—	—	CYPRUS MINERAL PARK,
(B-23-18) 35acc	55	623087	—	—	—	211668.6	3915131.8	—	58	58	7	—	—	—	—	—	NONE	—	—	—	CYPRUS MINERALS PARK,
(B-23-18) 35adc	55	85079	—	—	—	212064.9	3915120.6	—	—	—	—	—	—	—	—	—	—	—	—	—	DUVAL CORP,
(B-23-18) 35ccb	55	547352	—	—	—	210860.1	3914558.3	1/18/1995	148	147	4	—	—	1/18/1995	144	—	MON	D	—	—	MOHAVE COUNTY,
(B-23-18) 35ccc	55	623086	—	—	—	210855	3914359.6	—	170	170	12	—	—	—	—	—	NONE	—	—	—	CYPRUS MINERALS PARK,
(B-23-18) 35ccc	GWSI	623086	—	351958114105101	35-24857	210867.394	3914393.605	8/1/1973	170	167	12	70-160	3,530	8/1/1973	65	3,465	IND	D, G	—	—	CYPRUS MINERALS PARK
(B-23-18) 35ccc	35	—	24857	—	—	—	—	1973	170	167	12	—	—	—	105	—	IND	G, D	—	—	DUVAL CORP
(B-23-18) 35ccc	55	522975	—	—	—	210855	3914359.6	12/20/1988	77	58	6	—	—	12/20/1988	48	—	MON	D	—	—	GAMBI ENTERPRISES,
(B-23-18) 35dbb	55	542765	—	—	—	211662.8	3914932.6	—	—	—	—	—	—	—	—	—	MON	—	—	—	CYPRUS COPPER CO,
(B-23-18) 35dbb	55	623088	—	—	—	211662.8	3914932.6	—	58	58	7	—	—	—	—	—	NONE	—	—	—	CYPRUS MINERALS PARK,
(B-23-18) 35dbb	55	623089	—	—	—	211662.8	3914932.6	—	68	68	14	—	—	—	—	—	NONE	—	—	—	CYPRUS MINERALS PARK,

TABLE 1. WELL INVENTORY FOR SACRAMENTO VALLEY
MOHAVE COUNTY, ARIZONA

WELL IDENTIFIER	RECORD SOURCE	ADWR 55-WELL REGISTRY NUMBER	35-WELL REGISTRY NUMBER	GWSI SITE ID	WELL NAME/ INDEX WELL	UTM COORDINATES (NAD 27) Easting (meters)	UTM COORDINATES (NAD 27) Northing (meters)	DATE COMPLETED	WELL DEPTH (feet, bls)	CASING DEPTH (feet, bls)	CASING DIAMETER (inches)	CASING PERFORATED INTERVAL (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL DATE	WATER LEVEL DEPTH (feet, bls)	WATER LEVEL ALTITUDE (feet, msl)	WELL / WATER USE	LOG TYPE	REPORTED PUMPING RATE (gpm)	REPORTED TESTING RATE (gpm)	OWNER
(B-23-18) 35dbb	55	542766	—	—	—	211662.8	3914932.6	5/7/1994	58	58	4	—	—	5/7/1994	24	—	MON	D	—	—	CYPRUS COPPER CO,
(B-23-18) 35dbb	55	542767	—	—	—	211662.8	3914932.6	5/7/1994	44	44	4	—	—	5/7/1994	23	—	MON	D	—	—	CYPRUS COPPER CO,
(B-23-18) 35dbd	55	561013	—	—	—	211855	3914727.4	3/26/1997	145	142	6	—	—	3/26/1997	138	—	MON	D	—	—	CYPRUS MINERAL PARK,
(B-23-18) 35dcc	55	623090	—	—	—	211645.7	3914334.3	—	58	58	14	—	—	—	—	—	NONE	—	—	—	CYPRUS MINERALS PARK,
(B-23-18) 35dcc	55	85080	—	—	—	211645.7	3914334.3	—	—	—	—	—	—	—	—	—	—	—	—	—	DUVAL CORP,
(B-23-18) 36bad	GWSI	—	—	352024114092101	—	213166.178	3915122.178	—	400	—	—	—	3,850	1/1/1965	40	3,810	S	—	—	—	—
(B-23-18) 36bad	35	—	—	—	—	—	—	—	400	—	—	—	—	—	40	—	S	—	5	—	—

NOTES: This inventory excludes wells located in bedrock areas identified in Arizona Department of Water Resources (ADWR) Hydrologic Map Series Report Number 21, 1991.
Adjacent well data entries with the same "Well Number" are duplicates from different sources

ABBREVIATIONS:

55 = current ADWR registry of wells
35 = pre-1980 well registry system created by the Arizona State Land Department
ADWR = Arizona Department of Water Resources
BLM = U.S. Bureau of Land Management
feet, bls = feet below land surface
feet, msl = feet above mean sea level
gpm = gallons per minute
GWSI = Groundwater Site Inventory (maintained by ADWR)
M&A = Errol L. Montgomery & Associates, Inc.
NAD 27 = North American Datum, 1927; wells plotted in Zone 12N
UTM = Universal Transverse Mercator map projection

WELL/WATER USE:

D = Domestic
NONE = No water use
I = Irrigation
U = Unused
C = Commercial
S = Stock
MUN = Municipal/Public Sup
K = Other (Exploration)
IND = Industrial
Z = Other
T = Test
MIN = Mining
PROD = Production
MON = Monitoring
SUB = Subdivision
UTIL = Utility

LOG TYPE:

D = Driller's
G = Geologist's/Lithologic

TABLE 2. RESULTS FOR LABORATORY CHEMICAL ANALYSES FOR GROUNDWATER SAMPLES OBTAINED FROM GOLDEN VALLEY WELL GV-1 MOHAVE COUNTY, ARIZONA

Well Name:		GV-1	GV-1	GV-1	GV-1	GV-1	GV-1
ADWR Well Identifier:		901789	901789	901789	901789	901789	901789
Cadastral Location:		(B-21-18) 34DAB	(B-21-18) 34DAB	(B-21-18) 34DAB	(B-21-18) 34DAB	(B-21-18) 34DAB	(B-21-18) 34DAB
Lab Work Order:		0503431-01	0503405-01	0503407-02	0503407-01	0503405-02	0506283-01
Depth Sampled (feet):		1,090 - 1,100	1,160 - 1,180	1,280 - 1,300	1,400 - 1,420	1,570 - 1,590	Wellhead Sample
Date Sampled:		03/29/05	03/28/05	03/26/05	03/25/05	03/24/05	6/11/05 New Water Source
	UNITS						
FIELD PARAMETERS:							
Temperature	deg C	22.3	36.0	17.5	---	---	38.5
pH	std units	8.38	7.81	8.24	---	---	8.09
Electrical Conductivity (EC)	uS/cm	459	553	478	---	---	557.5
LAB RESULTS:							
Antimony (Sb)	mg/L	< 0.0030	< 0.0030	< 0.0030	< 0.0030	<0.0010	<0.0030
Arsenic (As)	mg/L	0.0067	0.030	0.0067	0.0054	0.0081	0.0078
Barium (Ba)	mg/L	0.068	0.025	0.032	<0.010	<0.010	0.032
Beryllium (Be)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cadmium (Cd)	mg/L	0.0038	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Chromium (Cr)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Copper (Cu)	mg/L	<0.010	<0.010	<0.010	0.016	<0.010	<0.010
Iron (Fe)	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Lead (Pb)	mg/L	< 0.0030	< 0.0030	< 0.0030	< 0.0030	<0.0010	<0.0030
Manganese (Mn)	mg/L	0.024	0.013	0.017	0.026	0.011	0.035
Mercury (Hg)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nickel (Ni)	mg/L	<0.010	<0.010	<0.010	0.017	0.011	<0.010
Selenium (Se)	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0030
Thallium (Tl)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020
Calcium (Ca)	mg/L	25	15	21	15	5.1	28
Magnesium (Mg)	mg/L	9.8	3.0	5.5	3.1	<1.0	21
Potassium (K)	mg/L	9.4	6.8	7.6	7.1	3.0	11.0
Sodium (Na)	mg/L	63	70	80	120	110	52
Cyanide (NH4)	mg/L						<0.010
Silica (SiO2)	mg/L	68	100	65	57	35	71
Chloride (Cl)	mg/L	29	45	19	23	30	40
Fluoride (F)	mg/L	0.64	0.56	0.55	0.59	0.91	0.67
Sulfate (as SO4)	mg/L	28	37	22	30	28	23
Nitrate (NO3 - as N)	mg/L	2.9	3.0	2.1	1.8	2.9	5.2
Nitrite (NO2 - as N)	mg/L	0.063	< 0.020	0.056	0.051	0.085	<0.020
Bicarbonate (HCO3 as CaCO3)	mg/L	170	120	190	260	170	170
Carbonate (CO3 as CaCO3)	mg/L	< 20	< 20	< 20	< 20	31	<20
Hydroxide (OH as CaCO3)	mg/L	< 20	< 20	< 20	< 20	< 20	<20
Total Alkalinity (Alk as CaCO3)	mg/L	170	120	190	260	200	170
pH	std units						7.9
Temperature	deg C						24.9
Hardness, Calcium (Hard)	mg/L	63	36	53	38	13	70
Specific Conductance (EC)	µS/cm	510	450	500	610	540	530
Total Dissolved Solids (TDS)	mg/L	400	380	840	1100	570	370
Gross Alpha Activity (Alpha)	pCi/L	5.2 ± 1.1	1.9 ± 0.7	7.6 ± 1.6	9.7 ± 3.2	---	4.3 ± 1.0
Langlier Index	ratio	---	---	---	---	---	0.03
Total Cloriform (Colilert)	---	---	---	---	---	---	Not Detected
Escherichia Coli	---	---	---	---	---	---	Not Detected
Asbestos	mf/L	---	---	---	---	---	< 1
ADEQ Required New Source Organic Compounds	---	---	---	---	---	---	Not Detected

Abbreviations:

deg C = degrees Celsius
mg/L = milligrams per liter
µS/cm = microSiemens per centimeter
pCi/L = picoCuries per liter
std units = standard units
mV = millivolts
mf/L = million fibers per liter
ADEQ = Arizona Department of Environmental Quality

ERROL L. MONTGOMERY & ASSOCIATES, INC.

ERROL L. MONTGOMERY & ASSOCIATES, INC.

ILLUSTRATIONS

CONTENTS

ILLUSTRATIONS

1 LOCATION MAP FOR SACRAMENTO VALLEY

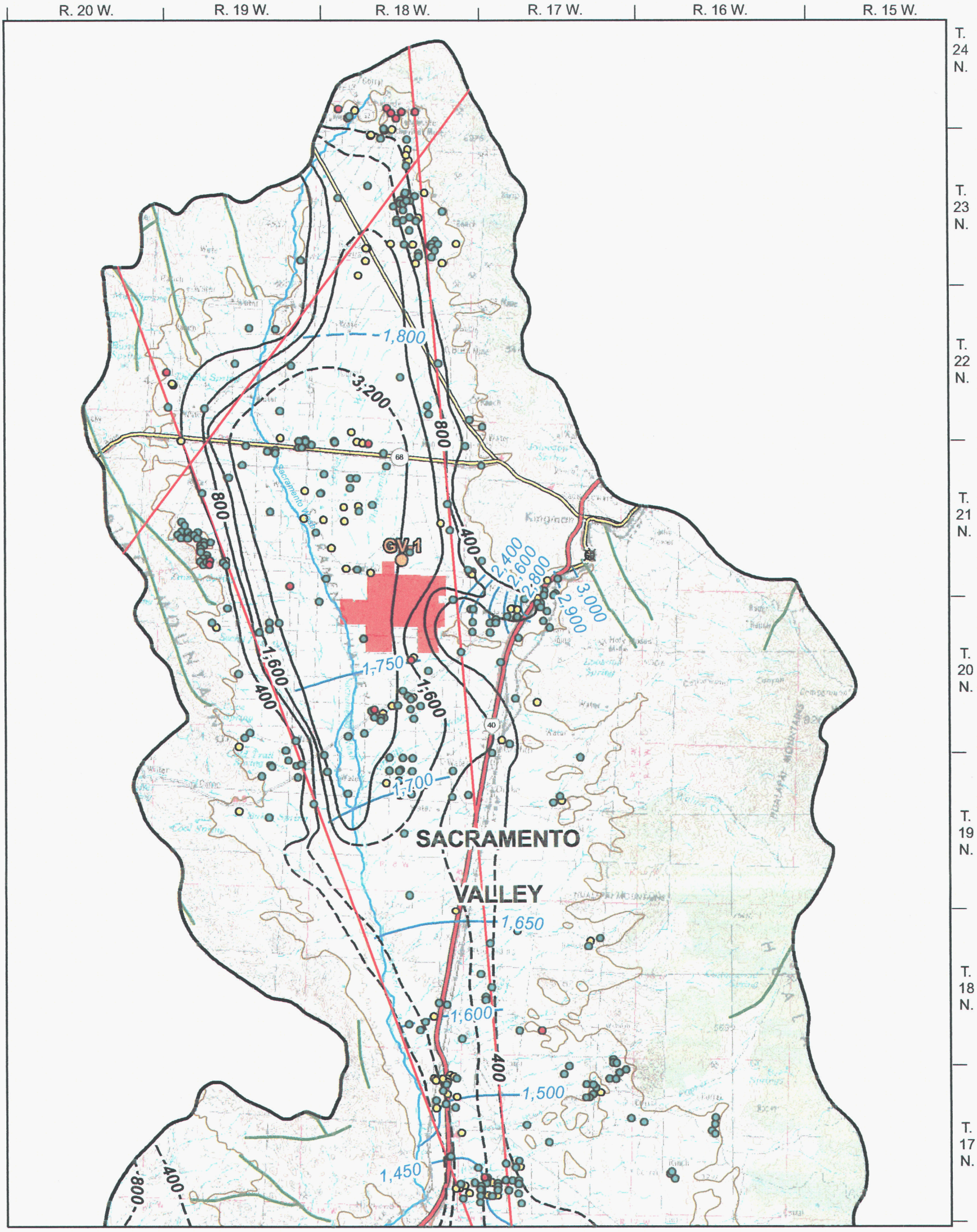
2 WATER LEVEL HYDROGRAPH FOR SELECTED WELLS IN SACRAMENTO VALLEY, MOHAVE COUNTY, ARIZONA

3 WATER LEVEL DRAWDOWN GRAPH FOR PUMPED WELL GV-1

4 WATER LEVEL RECOVERY GRAPH FOR PUMPED WELL GV-1

5 PROJECTED GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT GOLDEN VALLEY SOUTH

6 HYDROGRAPH OF GROUNDWATER LEVEL DRAWDOWN AT POINT OF MAXIMUM DRAWDOWN RESULTING FROM PUMPING 15,000 ACRE-FEET PER YEAR AT GOLDEN VALLEY SOUTH MASTER PLANNED COMMUNITY, MOHAVE COUNTY, ARIZONA



EXPLANATION

Note: Wells in bedrock areas are not included.

- Well from ADWR Groundwater Site Inventory
- Well from ADWR 55 Registry Inventory
- Well from ADWR 35 Registry Inventory
- New Well GV-1, B(21-18)34dba
- Fault (Arizona Geological Survey Digital Information Series 08, Ver. 3.0)
- Bedrock Boundary (ADWR Hydrologic Map Series, Report No. 21, 1991)
- Approximate Depth to Bedrock, in feet; dashed where unknown (Oppenheimer & Sumner, 1980)
- Boundary of Groundwater Basin (ADWR Hydrologic Map Series, Report No. 21, 1991)
- Groundwater Level Altitude Contour of 1990, in feet msl (ADWR Hydrologic Map Series, Report No. 21, 1991)
- Hydrologic Model Boundary
- Golden Valley South Master Planned Community

N

0 1 2 3 4
Miles

FIGURE 1. LOCATION MAP FOR SACRAMENTO VALLEY

GISDATA\Projects\440.21\SacramentoValleyBasin_extend.mxd UTM NAD27 12July2005

ERROL L. MONTGOMERY & ASSOCIATES, INC.

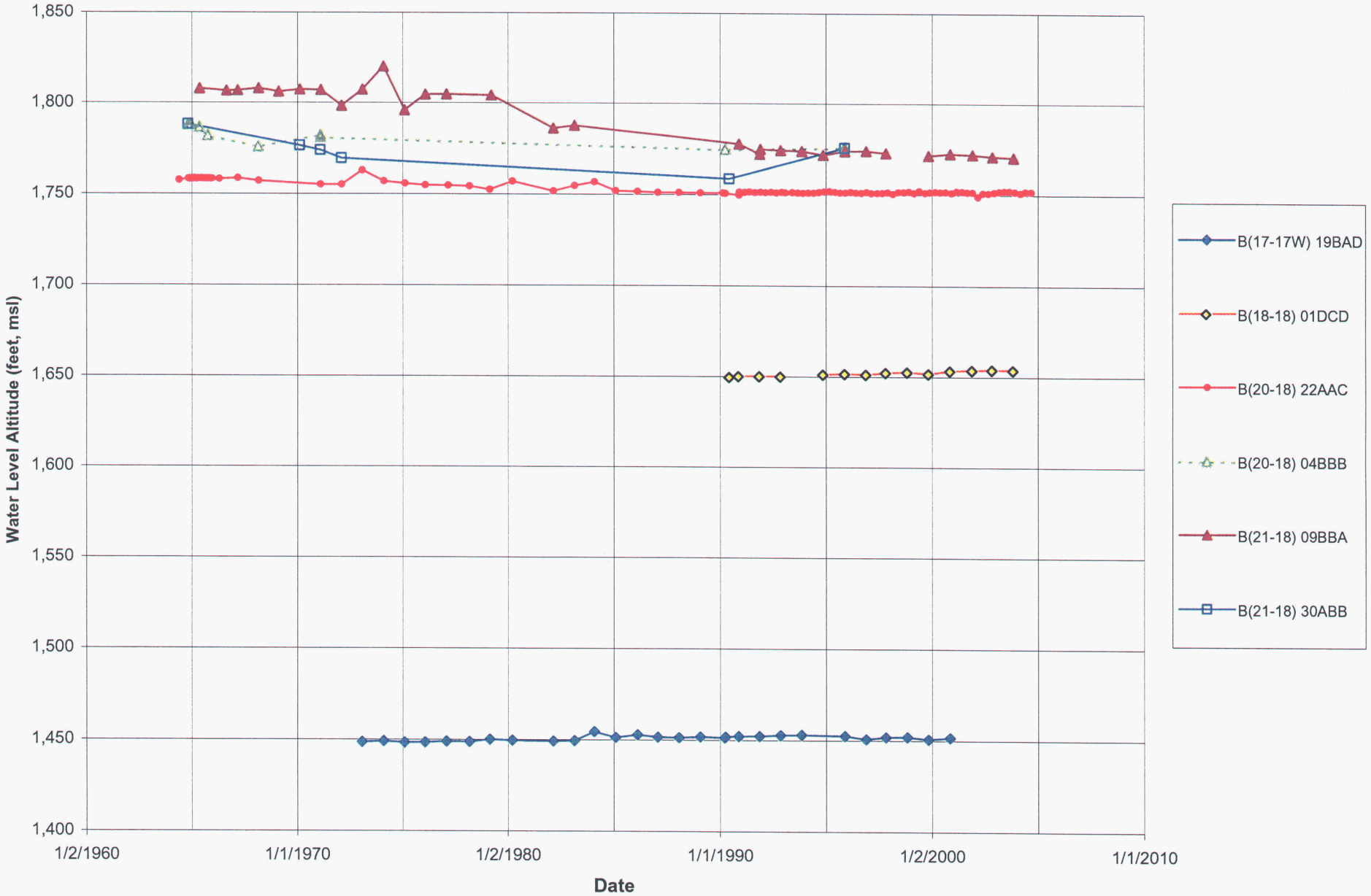


FIGURE 2. WATER LEVEL HYDROGRAPH FOR SELECTED WELLS IN SACRAMENTO VALLEY, MOHAVE COUNTY, ARIZONA

Sacramento_GWSI_WL.xls / 07-11-2005
Project No. 440.21

ERROL L. MONTGOMERY & ASSOCIATES, INC.

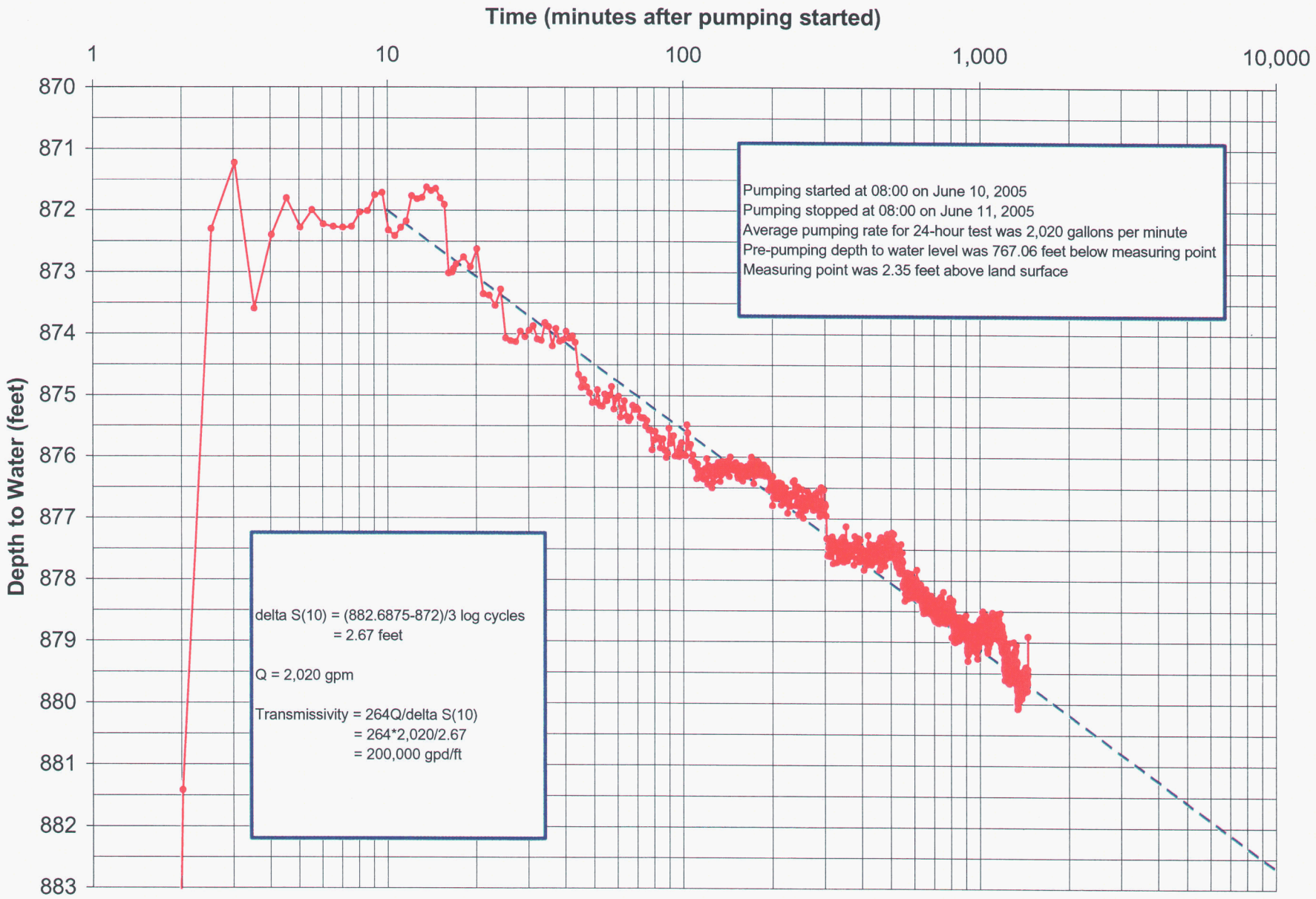


FIGURE 3. WATER LEVEL DRAWDOWN GRAPH FOR PUMPED WELL GV-1

ERROL L. MONTGOMERY & ASSOCIATES, INC.

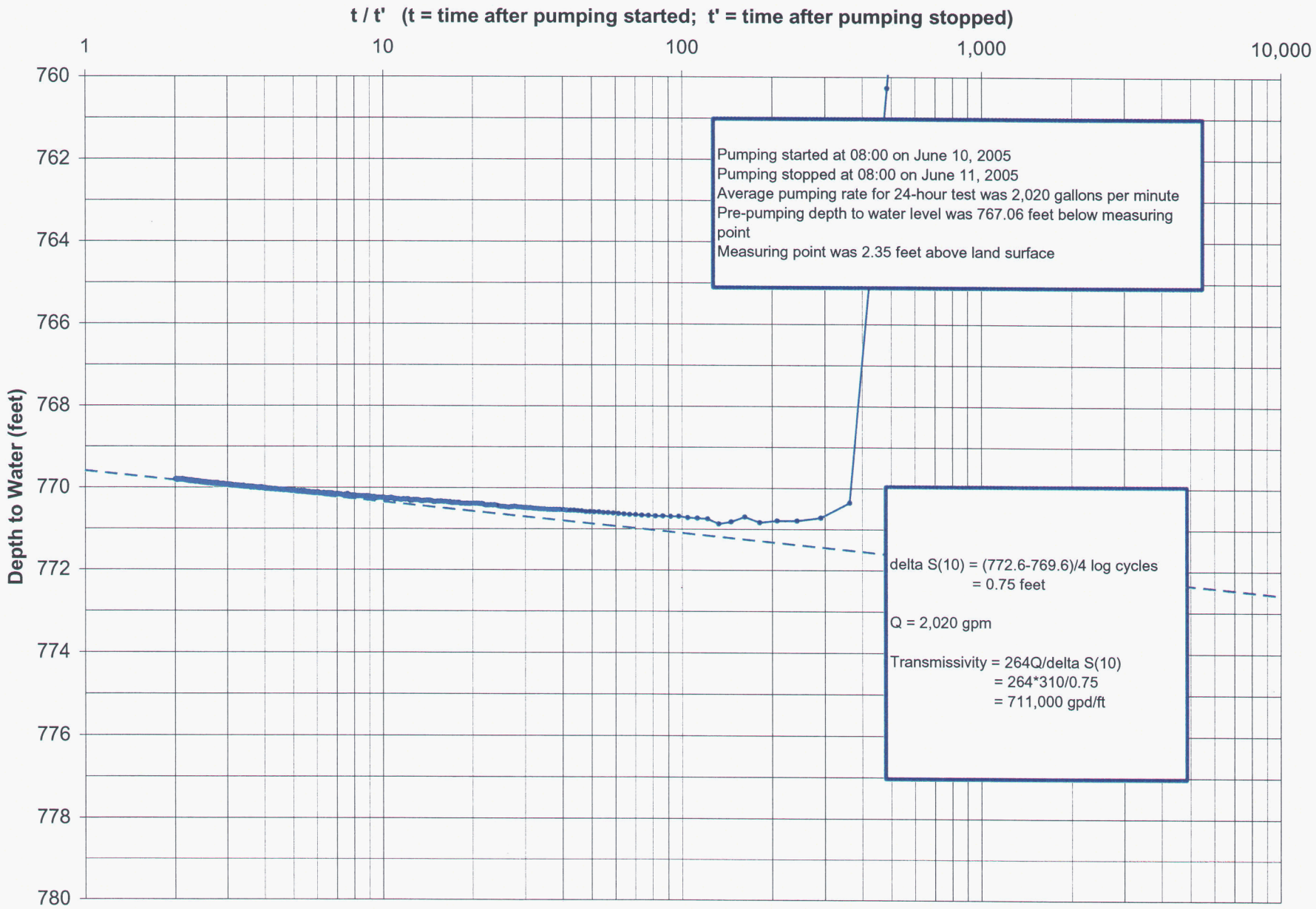
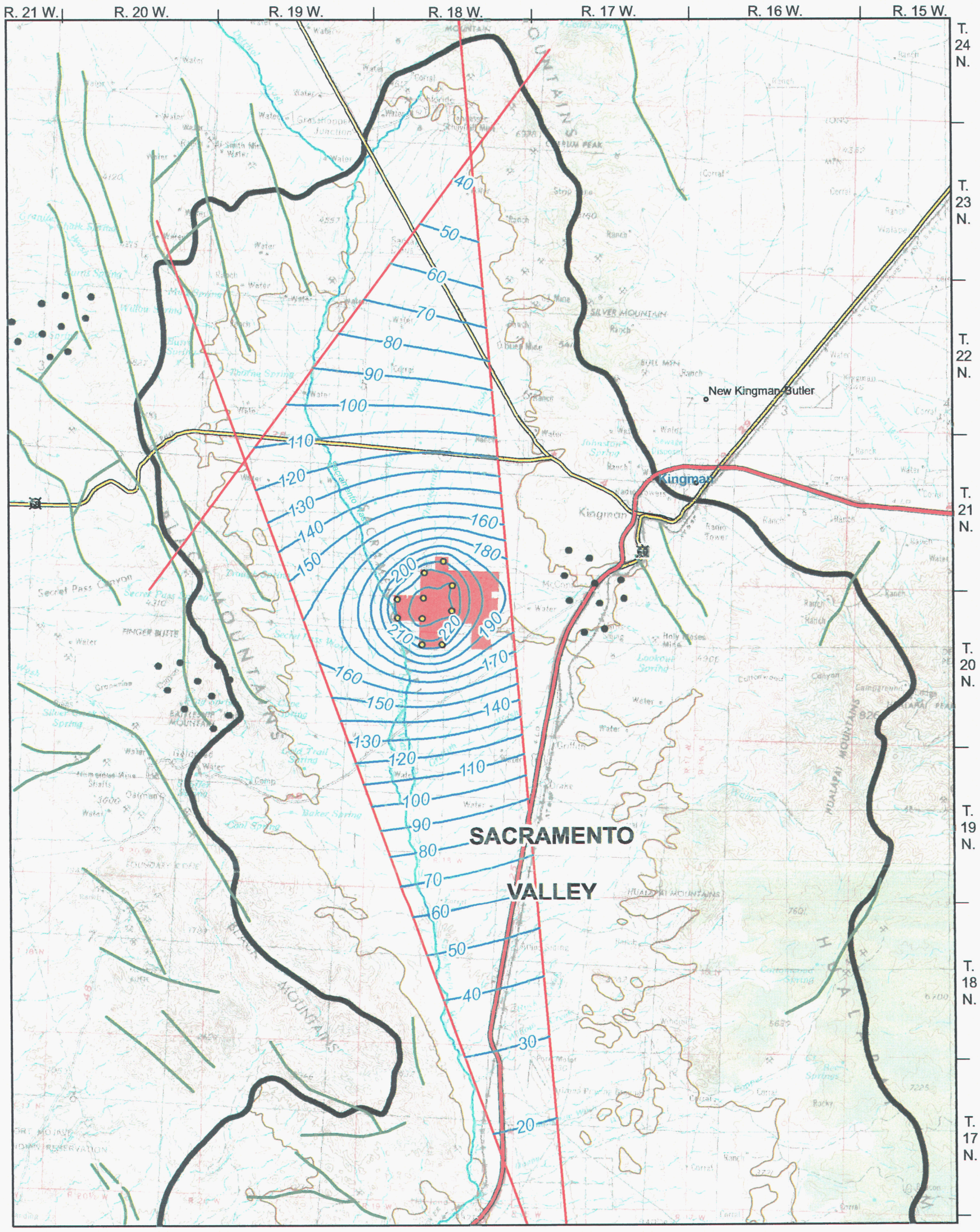


FIGURE 4. WATER LEVEL RECOVERY GRAPH FOR PUMPED WELL GV-1

ERROL L. MONTGOMERY & ASSOCIATES, INC.



EXPLANATION

- Model Production Well
- Image Production Well
- Fault (Arizona Geological Survey Digital Information Series 08, Ver. 3.0)
- Bedrock Boundary (ADWR Hydrologic Map Series, Report No. 21, 1991)
- Boundary of Groundwater Basin (ADWR Hydrologic Map Series, Report No. 21, 1991)
- 100-Year Drawdown Contour, in feet: 15,000 Acre-Feet Per Year Pumped
- Hydrologic Model Boundary
- Golden Valley South Master Planned Community

N

0 1 2 3 4

Miles

FIGURE 5. PROJECTED GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT GOLDEN VALLEY SOUTH

GISDATA\Projects\440.21\SacramentoValleyBasin_model_new.mxd UTM NAD27 12July2005

ERROL L. MONTGOMERY & ASSOCIATES, INC.

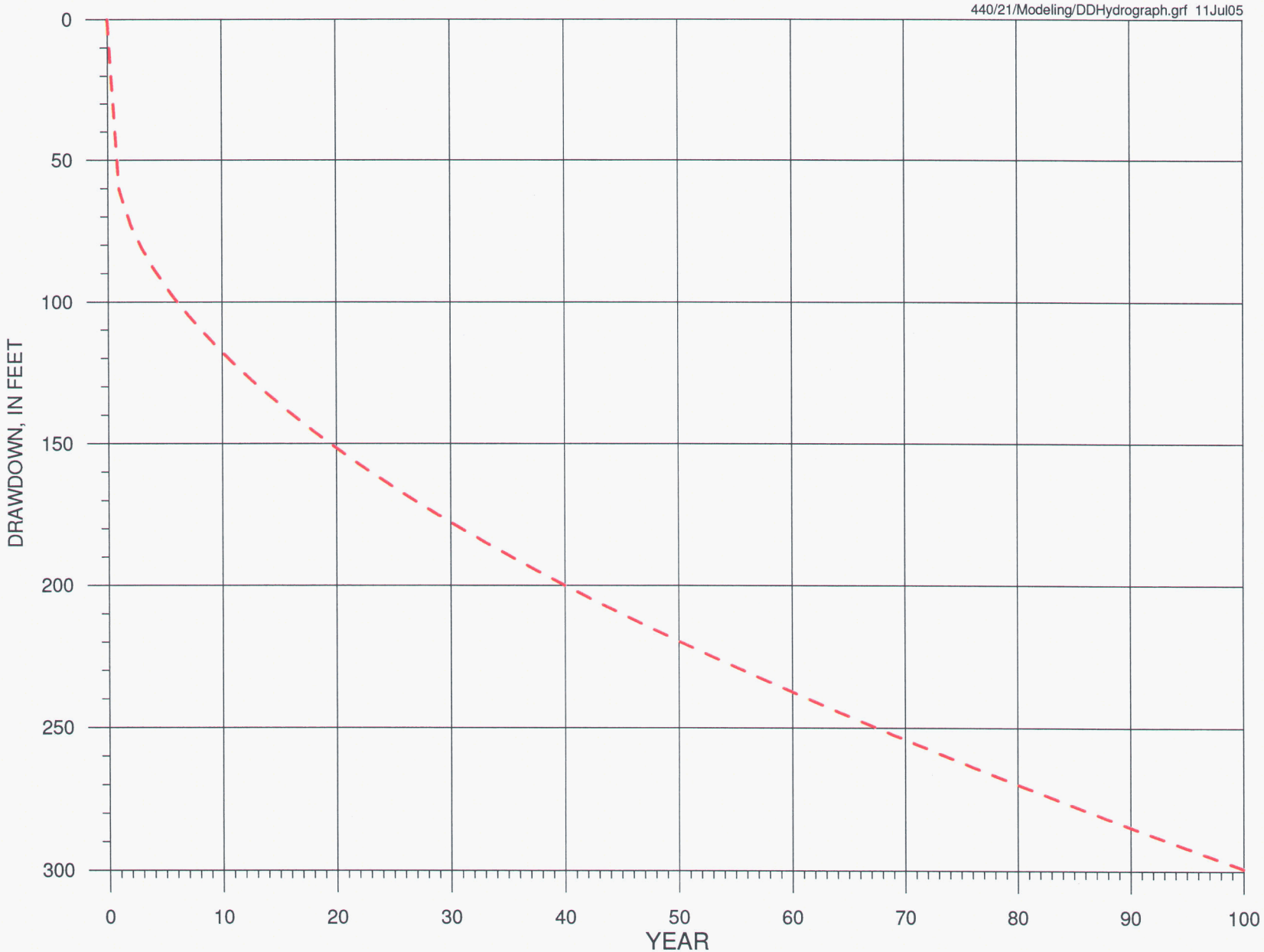


FIGURE 6. HYDROGRAPH OF GROUNDWATER LEVEL DRAWDOWN AT POINT OF MAXIMUM DRAWDOWN RESULTING FROM PUMPING 15,000 ACRE-FEET PER YEAR AT GOLDEN VALLEY SOUTH MASTER PLANNED COMMUNITY, MOHAVE COUNTY, ARIZONA

ERROL L. MONTGOMERY & ASSOCIATES, INC.

ERROL L. MONTGOMERY & ASSOCIATES, INC.

APPENDIX A

WELL NUMBERING SYSTEM

APPENDIX A

WELL NUMBERING SYSTEM

The well numbers used in this report are in accordance with the Bureau of Land Management's system of land subdivision. The land survey in Arizona is based on the Gila and Salt River meridian and base line, which divide the state into four quadrants. These quadrants are designated, counter-clockwise, by the capital letters A, B, C, and D. All land north and east of the point of origin is in quadrant A; all land north and west of the origin is in quadrant B; all land south and west of the origin is in quadrant C; and all land south and east of the origin is in quadrant D. The first digit of a well number indicates the township, the second digit the range, and the third digit the section in which the well is located. The lowercase letters a, b, c, and d after the section number indicate the well location within the section. The first letter denotes a particular 160-acre tract or quarter section; the second letter denotes the 40-acre tract or quarter-quarter section; and the third letter denotes the 10-acre tract or quarter-quarter-quarter section. These letters are also assigned in a counter-clockwise direction, beginning in the northeast quarter. As shown on **Figure A-1**, well number (B-05-03)15aaa designates the well as being located in the Northeast ¼, Northeast ¼, Northeast ¼ of Section 15, Township 5 North, Range 3 West. Where more than one well is located within a 10-acre tract, consecutive numbers beginning with "1" may be added as suffixes.

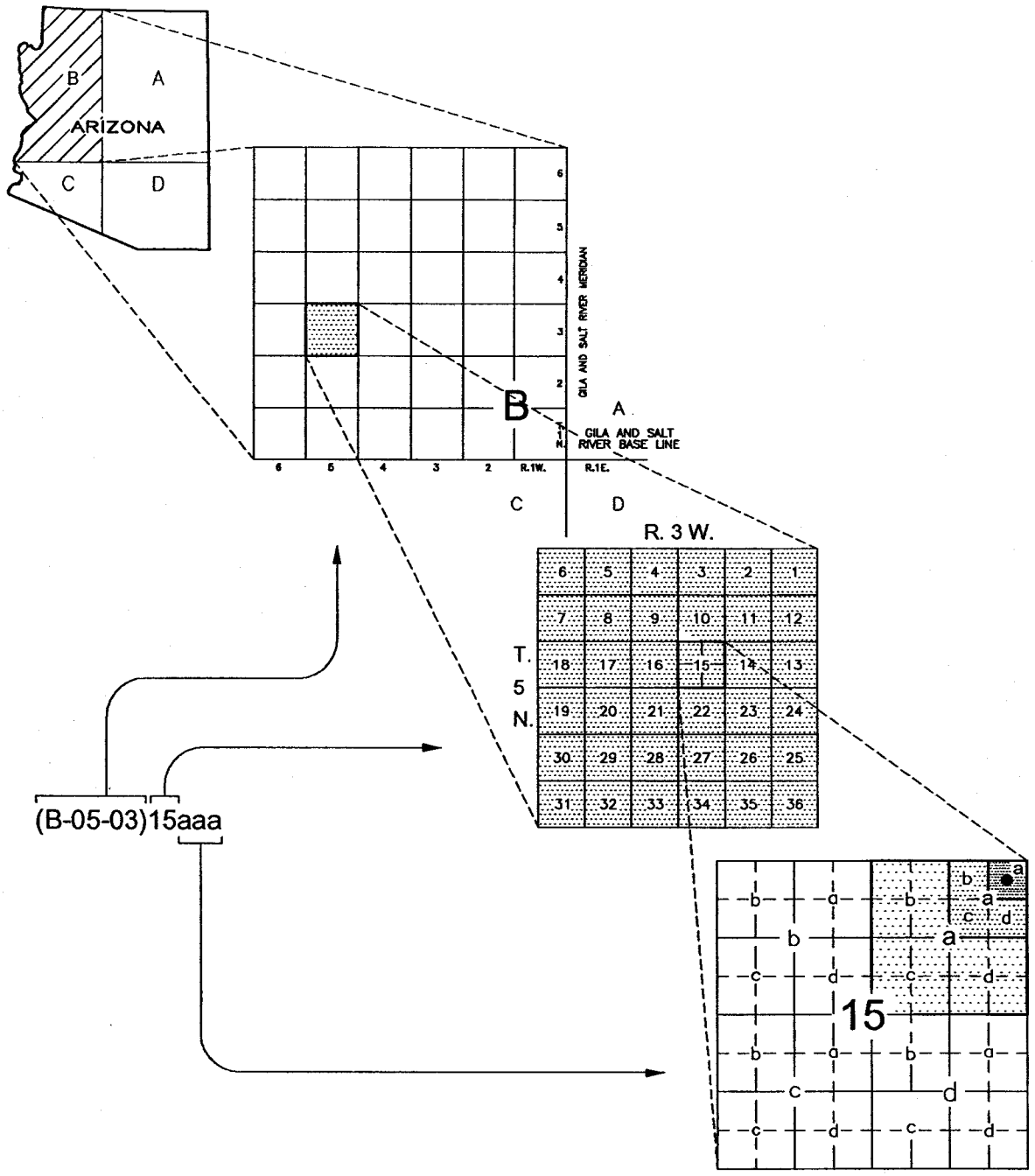


FIGURE A-1. WELL NUMBERING DIAGRAM

440\well numbering diagram\18Mar2005

ERROL L. MONTGOMERY & ASSOCIATES, INC.

ERROL L. MONTGOMERY & ASSOCIATES, INC.

APPENDIX B

LITHOLOGIC DESCRIPTIONS FOR DRILL CUTTINGS SAMPLES FOR GOLDEN VALLEY WELL GV-1

Date: 3-24-05
Observer: EW Peacock

Well Registration #: 55-901789
Location: B(21-18)34dba

LITHOLOGIC DESCRIPTION FOR DRILL CUTTINGS SAMPLES

GV-1 Production Well

DEPTH INTERVAL (feet)	DOMINANT COLOR(S)	SIZE DISTRIBUTION (percent - estimated)				LITHIFICATION	GROSS LITHOLOGY OR LITHOLOGY OF GRAVEL FRACTION	REACTION TO ACID (10% HCl)	COMMENTS
		GRAVEL	SAND & ROUNDNESS		SILT + CLAY				
0 - 10	Grayish Orng 10 YR 7/4	20	F - C 60		20	Non-lithified		strong	0-40 feet auger drillled
10 - 20	Grayish Orng 10 YR 7/4	20	F - C 60		20	Non-lithified (some caliche)	Some cobbles, gravel predominantly volcanic, basalt, some granitic rx	strong	
20 - 30	Grayish Orng 10 YR 7/4	20	F - C 60		20	Non-lithified (some caliche)	Some cobbles, gravel predominantly volcanic, basalt, some granitic rx	strong	
30 - 40	Grayish Orng 10 YR 7/4	20	F - C 60		20	Non-lithified (some caliche)	Some cobbles, gravel predominantly volcanic, basalt, some granitic rx	strong	
40 - 50	Dk. yellowish orng 10YR 6/6	60	20		20	Non-lithified	Qtz, tuff, rhyolite, andesite/basalt	strong	flooded reverse below 40 feet
50 - 60	Dk. yellowish orng 10YR 6/6	60	20		20	Non-lithified	Qtz, tuff, rhyolite, andesite/basalt	strong	
60 - 70	Dk. yellowish orng 10YR 6/6	60	20		20	Non-lithified	Qtz, tuff, rhyolite, andesite/basalt	strong	
70 - 80	Dk. yellowish brn 10YR 4/2	20	C 80		tr	Non-lithified	Qtz, tuff, rhyolite, andesite/basalt; (more abundant andesite/basalt below 70 ft.)	moderate	
80 - 90	Dk. yellowish brn 10YR 4/2	20	C 80		tr	Non-lithified	Qtz, tuff, rhyolite, andesite/basalt; (more abundant andesite/basalt below 70 ft.)	moderate	
90 - 100	Dk. yellowish brn 10YR 4/2	20	C 80		tr	Non-lithified	Qtz, tuff, rhyolite, andesite/basalt; (more abundant andesite/basalt below 70 ft.)	moderate	
100 - 110	Dk. yellowish brn 10YR 4/2	20	C 80		tr	Non-lithified	Qtz, tuff, rhyolite, andesite/basalt; (more abundant andesite/basalt below 70 ft.)	moderate	
110 - 120	Dk. yellowish brn 10YR 4/2	20	C 80		tr	Non-lithified	Qtz, tuff, rhyolite, andesite/basalt; (more abundant andesite/basalt below 70 ft.)	moderate	
120 - 130	Dk. yellowish brn 10YR 4/2	20	C 80		tr	Non-lithified	Qtz, tuff, rhyolite, andesite/basalt; (more abundant andesite/basalt below 70 ft.)	moderate	
130 - 140	Dk. yellowish brn 10YR 4/2	80	C 20		tr	Non-lithified	Qtz, tuff, rhyolite, andesite/basalt, angular to sub-rounded	moderate	

ERROL L. MONTGOMERY & ASSOCIATES, INC.

Date: 3-24-05
Observer: EW Peacock

LITHOLOGIC DESCRIPTION FOR DRILL CUTTINGS SAMPLES

Well Registration #: 55-901789
Location: B(21-18)34dba

GV-1 Production Well

DEPTH INTERVAL (feet)	DOMINANT COLOR(S)	SIZE DISTRIBUTION (percent - estimated)				LITHIFICATION	GROSS LITHOLOGY OR LITHOLOGY OF GRAVEL FRACTION	REACTION TO ACID (10% HCl)	COMMENTS
		GRAVEL	SAND & ROUNDNESS		SILT + CLAY				
140 - 150	Dk. yellowish brn 10YR 4/2	20	80		tr	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	moderate	
150 - 160	Dk. yellowish brn 10YR 4/2	20	80		tr	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	moderate	
160 - 170	Dk. yellowish brn 10YR 4/2	20	80		tr	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	moderate	
170 - 180	Dk. yellowish brn 10YR 4/2	50	50		tr	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	moderate	
180 - 190	Dk. yellowish brn 10YR 4/2	80	20		---	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	moderate	
190 - 200	Dk. yellowish brn 10YR 4/2	80	20		tr	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	moderate	
200 - 210	Grayish brn 5YR 3/2	80	20		---	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak	
210 - 220	Dk. yellowish brn 10YR 4/2	60	40		---	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak	
220 - 230	Drk. yellowish brn 10YR 4/2 Pale brn 5YR 5/2 Grayish brn 5YR 3/2 Dusky yellowish brn 10YR 2/2	80	20		---	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak	

ERROL L. MONTGOMERY & ASSOCIATES, INC.

Date: 3-24-05
Observer: EW Peacock

Well Registration #: 55-901789
Location: B(21-18)34dba

LITHOLOGIC DESCRIPTION FOR DRILL CUTTINGS SAMPLES

GV-1 Production Well

DEPTH INTERVAL (feet)	DOMINANT COLOR(S)	SIZE DISTRIBUTION (percent - estimated)				LITHIFICATION	GROSS LITHOLOGY OR LITHOLOGY OF GRAVEL FRACTION	REACTION TO ACID (10% HCl)	COMMENTS
		GRAVEL	SAND & ROUNDNESS		SILT + CLAY				
230 - 240	Drk. yellowish brn 10YR 4/2 Pale brn 5YR 5/2 Grayish brn 5YR 3/2 Dusky yellowish brn 10YR 2/2	100	tr		---	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak	
240 - 250	Drk. yellowish brn 10YR 4/2 Pale brn 5YR 5/2 Grayish brn 5YR 3/2 Dusky yellowish brn 10YR 2/2	80	20		---	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak	
250 - 260	Drk. yellowish brn 10YR 4/2 Pale brn 5YR 5/2 Grayish brn 5YR 3/2 Dusky yellowish brn 10YR 2/2	100	tr		---	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak	
260 - 270	Drk. yellowish brn 10YR 4/2 Pale brn 5YR 5/2 Grayish brn 5YR 3/2 Dusky yellowish brn 10YR 2/2	80	C 20		tr	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak	
270 - 280	Drk. yellowish brn 10YR 4/2 Pale brn 5YR 5/2 Grayish brn 5YR 3/2 Dusky yellowish brn 10YR 2/2	80	C 20		---	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak	

ERROL L. MONTGOMERY & ASSOCIATES, INC.

Date: 3-24-05
Observer: EW Peacock

Well Registration #: 55-901789
Location: B(21-18)34dba

LITHOLOGIC DESCRIPTION FOR DRILL CUTTINGS SAMPLES

GV-1 Production Well

DEPTH INTERVAL (feet)	DOMINANT COLOR(S)	SIZE DISTRIBUTION (percent - estimated)				LITHIFICATION	GROSS LITHOLOGY OR LITHOLOGY OF GRAVEL FRACTION	REACTION TO ACID (10% HCl)	COMMENTS
		GRAVEL	SAND & ROUNDNESS		SILT + CLAY				
280 - 290	Drk. yellowish brn 10YR 4/2 Pale brn 5YR 5/2 Grayish brn 5YR 3/2 Dusky yellowish brn 10YR 2/2	90	10		---	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak	
290 - 300	Drk. yellowish brn 10YR 4/2 Pale brn 5YR 5/2 Grayish brn 5YR 3/2 Dusky yellowish brn 10YR 2/2	90	10		---	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak	
300 - 310	Dusky brn 5YR 2/2	90	10		---	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak	
310 - 320	Drk. yellowish brn 10YR 4/2 Pale brn 5YR 5/2 Grayish brn 5YR 3/2 Dusky yellowish brn 10YR 2/2	90	10		---	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak	
320 - 330	Drk. yellowish brn 10YR 4/2 Pale brn 5YR 5/2 Grayish brn 5YR 3/2 Dusky yellowish brn 10YR 2/2	90	10		---	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak	
330 - 340	Pale brn 5YR 5/2	80	20		tr	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak	

LITHOLOGIC DESCRIPTION FOR DRILL CUTTINGS SAMPLES

Well Registration #: 55-901789
Location: B(21-18)34dba

Date: 3-24-05
Observer: EW Peacock

GV-1 Production Well

DEPTH INTERVAL (feet)	DOMINANT COLOR(S)	SIZE DISTRIBUTION (percent - estimated)				LITHIFICATION	GROSS LITHOLOGY OR LITHOLOGY OF GRAVEL FRACTION	REACTION TO ACID (10% HCl)	COMMENTS
		GRAVEL	SAND & ROUNDNESS		SILT + CLAY				
340 - 350	Pale brn 5YR 5/2	80	20		tr	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak	
350 - 360	Pale brn 5YR 5/2 Dusky yellowish brn 10YR 2/2	80	20		tr	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak	
360 - 370	Pale brn 5YR 5/2 Dusky yellowish brn 10YR 2/2	90	10		tr	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak	
370 - 380	Pale brn 5YR 5/2 Dusky yellowish brn 10YR 2/2	90	10		tr	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak	
380 - 390	Pale brn 5YR 5/2 Dusky yellowish brn 10YR 2/2	90	10		tr	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak to moderate	
390 - 400	Pale brn 5YR 5/2 Dusky yellowish brn 10YR 2/2	90	10		tr	Non-lithified	Predominantly andesite/basalt with qtz., tuff, rhyolite; some boulders and cobbles	weak to moderate	
400 - 410	Lt. brown 5YR 6/4	80	20		tr	Poorly lithified	Angular; qtz, rhyolite, basalt	Weak to none	
410 - 420	Lt. brown 5YR 6/4	80	20		tr	Poorly lithified	Angular; qtz, rhyolite, basalt	Weak to none	
420 - 430	Lt. brown 5YR 6/4	80	20		tr	Poorly lithified	Angular; qtz, rhyolite, basalt; abundant tuffaceous fragments	Weak to none	
430 - 440	Lt. brown 5YR 6/4	80			20	Poorly lithified	Angular; qtz, rhyolite, basalt; abundant tuffaceous fragments	Weak to none	
440 - 450	Lt. brown 5YR 6/4	---	---		---	Well lithified	tuff (rhyolitic to dacite?)	Weak to none	
450 - 460	Lt. brown 5YR 6/4	---	---		10	Well lithified	tuff (rhyolitic to dacite?); weathered	Weak to none	
460 - 470	Lt. brown 5YR 6/4	20	50		30	Poorly lithified	Sand & gravel, abundant feldspar & qtz, abundant volcanics	Weak to none	Increase in clay
470 - 480	Lt. brown 5YR 6/4	10	50		40	Poorly lithified	Sand with clay, weathered volcanic and pyroclastic?	Weak to none	
480 - 490	Mod. reddish brn 10YR 4/6	10	50		40	Poorly lithified	Sand with clay, weathered volcanic and pyroclastic?	Weak to none	

ERROL L. MONTGOMERY & ASSOCIATES, INC.

Date: 3-24-05
Observer: EW Peacock

Well Registration #: 55-901789
Location: B(21-18)34dba

LITHOLOGIC DESCRIPTION FOR DRILL CUTTINGS SAMPLES

GV-1 Production Well

DEPTH INTERVAL (feet)	DOMINANT COLOR(S)	SIZE DISTRIBUTION (percent - estimated)				LITHIFICATION	GROSS LITHOLOGY OR LITHOLOGY OF GRAVEL FRACTION	REACTION TO ACID (10% HCl)	COMMENTS
		GRAVEL	SAND & ROUNDNESS		SILT + CLAY				
490 - 500	Mod. reddish brn 10YR 4/6	40	50		10	Poorly lithified	Sand with clay, weathered volcanic and pyroclastic?	Weak to none	
500 - 510	Brownish gray 5YR 4/1	60	30		10	Poorly lithified	Volcanic sand & gravel, subrounded to angular, dacite?, andesite qtz., feldspar	Weak to none	Clay and siliceous coatings on clasts
510 - 520	Brownish gray 5YR 4/1	60	30		10	Poorly lithified	Volcanic sand & gravel, subrounded to angular, dacite?, andesite qtz., feldspar	Weak to none	
520 - 530	Brownish gray 5YR 4/1	60	30		10	Poorly lithified	Volcanic sand & gravel, subrounded to angular, dacite?, andesite qtz., feldspar	Weak to none	
530 - 540	Brownish gray 5YR 4/1	60	30		10	Poorly lithified	Volcanic sand & gravel, subrounded to angular, dacite?, andesite qtz., feldspar	Weak to none	
540 - 550	Brownish gray 5YR 4/1	50	40		10	Poorly lithified	Volcanic sand & gravel, subrounded to angular, dacite?, andesite qtz., feldspar	Weak to none	
550 - 560	Brownish gray 5YR 4/1	50	40		10	Poorly lithified	Volcanic sand & gravel, subrounded to angular, dacite?, andesite qtz., feldspar	Weak to none	
560 - 570	Brownish gray 5YR 4/1	50	40		10	Poorly lithified	Volcanic sand & gravel, subrounded to angular, dacite?, andesite qtz., feldspar	Weak to none	
570 - 580	Brownish gray 5YR 4/1	70	20		10	Poorly lithified	Volcanic gravel, sub-rounded, clay coatings on clasts	Weak to none	
580 - 590	Dk. yellowish brn 10YR 4/2	60	30		20	Poorly lithified	Volcanic gravel, sub-rounded, some qtz sand	Weak to none	
590 - 600	Dk. yellowish brn 10YR 4/2	70	20		10	Poorly lithified	Volcanic gravel, sub-rounded, clay coatings on clasts	Weak to none	
600 - 610	Dk. yellowish brn 10YR 4/2	70	20		10	Poorly lithified	Volcanic gravel, sub-rounded, clay coatings on clasts	Weak to none	
610 - 620	Dk. yellowish brn 10YR 4/2	70	20		10	Poorly lithified	Volcanic gravel, sub-rounded, clay coatings on clasts	Weak to none	
620 - 630	Mod. red 5YR 4/6	---	---		100	Poorly lithified	Red clay (fault gouge?)	Weak to none	Possible paleosoil, but nearly pure clay

Date: 3-24-05
Observer: EW Peacock

Well Registration #: 55-901789
Location: B(21-18)34dba

LITHOLOGIC DESCRIPTION FOR DRILL CUTTINGS SAMPLES

GV-1 Production Well

DEPTH INTERVAL (feet)	DOMINANT COLOR(S)	SIZE DISTRIBUTION (percent - estimated)				LITHIFICATION	GROSS LITHOLOGY OR LITHOLOGY OF GRAVEL FRACTION	REACTION TO ACID (10% HCl)	COMMENTS
		GRAVEL	SAND & ROUNDNESS		SILT + CLAY				
630 - 640	Mod. red 5YR 4/6	---	---		100	Poorly lithified	Red clay (fault gouge?)	Weak to none	
640 - 650	Mod. red 5YR 4/6	---	---		100	Poorly lithified	Red clay (fault gouge?)	Weak to none	
650 - 660	Grayish orng 10YR 7/4	---	---		100	Poorly lithified	Grayish orange clay (much LCM also)	Weak to none	
660 - 670	Dk. reddish brn 10R 3/4	---	---		---	Poorly lithified	Lava flow (basalt or andesite); scoria?	Weak to none	Possible interflow zone
670 - 680	Dk. reddish brn 10R 3/4	---	---		---	Poorly lithified	Lava flow (basalt or andesite); scoria?	Weak to none	Possible interflow zone
680 - 690	Brownish gray	---	---		---	Well lithified	Lava flow (basalt or andesite); scoria?	Weak to none	
690 - 700	Brownish gray	---	---		---	Well lithified	Lava flow (basalt or andesite); scoria?	Weak to none	
700 - 710	Brownish gray	---	---		---	Well lithified	Lava flow (basalt or andesite); scoria?	Weak to none	
710 - 720	Dk. gray N3	---	---		---	Well lithified	Lava flow (basalt or andesite); scoria?	Weak to none	
720 - 730	Dk. gray N3	---	---		---	Well lithified	Lava flow (basalt or andesite); scoria?	Weak to none	
730 - 740	Grayish red 10R 4/2	---	---		10	poor to moderate?	Lava flow rocks and scoria	Weak to none	possible paleosoil or interflow zone
740 - 750	Dk. reddish brn 10R 3/4	---	---		---	poor to moderate?	Lava flow rocks and scoria	Weak to none	possible paleosoil or interflow zone
750 - 760	Brownish gray 5YR 4/1	---	---		---	Well lithified	Lava flow (basalt or andesite)	Weak to none	
760 - 770	Brownish gray 5YR 4/1	---	---		---	Well lithified	Lava flow (basalt or andesite)	Weak to none	
770 - 780	Brownish gray 5YR 4/1	---	---		---	Well lithified	Lava flow (basalt or andesite)	Weak to none	
780 - 790	Brownish gray 5YR 4/1	---	---		---	Well lithified	Lava flow (basalt or andesite)	Weak to none	
790 - 800	Dk. gray N3 Dk. reddish brn 10R 3/4	---	---		---	Well lithified	Lava flow (basalt or andesite)	Weak to none	

Date: 3-24-05
Observer: EW Peacock

Well Registration #: 55-901789
Location: B(21-18)34dba

LITHOLOGIC DESCRIPTION FOR DRILL CUTTINGS SAMPLES

GV-1 Production Well

DEPTH INTERVAL (feet)	DOMINANT COLOR(S)	SIZE DISTRIBUTION (percent - estimated)				LITHIFICATION	GROSS LITHOLOGY OR LITHOLOGY OF GRAVEL FRACTION	REACTION TO ACID (10% HCl)	COMMENTS
		GRAVEL	SAND & ROUNDNESS		SILT + CLAY				
800 - 810	Brownish black 5YR 2/1	---	---		---	Well lithified	Lava flow (basalt or andesite)	Weak to none	
810 - 820	Brownish black 5YR 2/1	---	---		---	Well lithified	Lava flow (basalt or andesite)	Weak to none	
820 - 830	Grayish red 10R 4/2	---	---		---	Well lithified	Lava flow (basalt or andesite)	Weak to none	
830 - 840	Grayish red 10R 4/2	---	---		---	Well lithified	Lava flow (basalt or andesite)	Weak to none	
840 - 850	Grayish red 10R 4/2	---	---		---	Well lithified	Lava flow (basalt or andesite)	Weak to none	
850 - 860	Grayish red 10R 4/2	---	---		---	Poor to Mod.	Lava flow rocks (basalt or andesite) with increasing scoria	Weak to none	
860 - 870	Dusky brn 5YR 2/2	---	---		---	Poor to Mod.	Lava flow rocks (basalt or andesite) with increasing scoria	Weak to none	
870 - 880	Dusky brn 5YR 2/2	---	---		---	Poor to Mod.	Lava flow rocks (basalt or andesite) with increasing scoria	Weak to none	
880 - 890	Dusky brn 5YR 2/2	---	---		---	Poor to Mod.	Lava flow rocks (basalt or andesite) with increasing scoria	Weak to none	
890 - 900	Dusky brn 5YR 2/2	---	---		---	Poor to Mod.	Lava flow rocks (basalt or andesite) with increasing scoria	Weak to none	
900 -910	Dusky brn 5YR 2/2	---	---		---	Poor to Mod.	Scoria (?); weathered, altered	Weak to none	Possible interflow zone
910 - 920	Dusky brn 5YR 2/2	---	---		10	Poor to Mod.	Lava flow rocks (basalt or andesite); scoria?; weathered, altered	Weak to none	Possible interflow zone
920 - 930	Dk. gray N3	---	---		---	Well lithified	Lava flow (basalt or andesite)	Weak to none	
930 - 940	Grayish red 10R 4/2	---	---		10	Poor to Mod.	Clay and weathered volcanic rock (scoria?)	Weak to none	
940 - 950	Grayish red 10R 4/2 Mod. red 5R 5/4	---	---		30	Poor to Mod.	Clay and weathered volcanic rock (scoria?)	Weak to none	
950 - 960	Grayish red 10R 4/2 Mod. red 5R 5/4	---	---		50	Poor to Mod.	Clay and weathered volcanic rock (scoria?)	Weak to none	
960 - 970	Dk. reddish brn 10R 3/4	---	---		30	Poor to Mod.	Clay and weathered volcanic rock (scoria?)	Weak to none	

ERROL L. MONTGOMERY & ASSOCIATES, INC.

Date: 3-24-05
Observer: EW Peacock

Well Registration #: 55-901789
Location: B(21-18)34dba

LITHOLOGIC DESCRIPTION FOR DRILL CUTTINGS SAMPLES

GV-1 Production Well

DEPTH INTERVAL (feet)	DOMINANT COLOR(S)	SIZE DISTRIBUTION (percent - estimated)				LITHIFICATION	GROSS LITHOLOGY OR LITHOLOGY OF GRAVEL FRACTION	REACTION TO ACID (10% HCl)	COMMENTS
		GRAVEL	SAND & ROUNDNESS		SILT + CLAY				
970 - 980	Lt. brown 5YR 5/6 Dk. reddish brn 10R 3/4	---	---		50	Poor to Mod.	Clay and weathered volcanic rock (lava flow?)	Weak to none	Interflow zone or paleosoil
980 - 990	Lt. brn 5YR 5/6	---	---		100	Poor to Mod.	Clay; interflow zone or paleosoil	Weak to none	No relict texture visible
990 - 1000	Grayish black N2	---	---		---	Well lithified	Lava flow (basalt or andesite)	Weak to none	Vugs & fracture surfaces show siliceous coatings
1000 - 1010	Grayish black N2	---	---		---	Well lithified	Lava flow (basalt or andesite)	Weak to none	
1010 - 1020	Grayish black N2 Brownish black 5YR 2/1	---	---		---	Well lithified	Lava flow (basalt or andesite)	Weak to none	
1020 - 1030	Mod. yellowish brn 10YR 5/4 Grayish black N2	---	---		tr	Well lithified	Lava flow rocks (basalt or andesite); more weathered, possible pyroclastics	Weak to none	
1030 - 1040	Mod. yellowish brn 10YR 5/4 Grayish black N2	---	---		tr	Well lithified	Lava flow rocks (basalt or andesite); more weathered, possible pyroclastics	Weak to none	
1040 - 1050	Mod. yellowish brn 10YR 5/4 Grayish black N2	---	---		tr	Well lithified	Lava flow rocks (basalt or andesite); more weathered, possible pyroclastics	Weak to none	
1050 - 1060	Mod. yellowish brn 10YR 5/4	---	---		tr	Mod. to well lithified	Lava flow (basalt or andesite); weathered, may contain scoria	Weak to none	
1060 - 1070	Grayish black N2 Mod. Yellowish brn 10YR 5/4	---	---		tr	Well lithified	Lava flow (basalt or andesite); some silica & calcite in fractures & vesicles	Weak to none	
1070 - 1080	Grayish black N2 Dusky red 5R 3/4	---	---		tr	Mod. to well lithified	Lava flow (basalt or andesite); some silica & trace calcite in fractures & vesicles	Weak to none	
1080 - 1090	Dusky red 5R 3/4	---	---		tr	Well lithified	Lava flow (basalt or andesite); some silica & trace calcite in fractures & vesicles	Weak to none	

Date: 3-24-05
Observer: EW Peacock

Well Registration #: 55-901789
Location: B(21-18)34dba

LITHOLOGIC DESCRIPTION FOR DRILL CUTTINGS SAMPLES

GV-1 Production Well

DEPTH INTERVAL (feet)	DOMINANT COLOR(S)	SIZE DISTRIBUTION (percent - estimated)				LITHIFICATION	GROSS LITHOLOGY OR LITHOLOGY OF GRAVEL FRACTION	REACTION TO ACID (10% HCl)	COMMENTS
		GRAVEL	SAND & ROUNDNESS		SILT + CLAY				
1090 - 1100	Grayish black N2	---	---		tr	Well lithified	Lava flow (basalt or andesite); some silica & trace calcite in fractures & vesicles	Weak to none	
1100 - 1110	Grayish black N2	---	---		tr	Well lithified	Lava flow (basalt or andesite); some silica & trace calcite in fractures & vesicles	Weak to none	
1110 - 1120	Grayish black N2	---	---		tr	Well lithified	Lava flow (basalt or andesite); some silica & trace calcite in fractures & vesicles	Weak to none	
1120 - 1130	Mod. reddish brn 10YR 4/6	---	---		50	Mod. to well lithified	Weathered lava flow or interflow zone	Weak to none	Possible paleosoil
1130 - 1140	Mod. reddish brn 10YR 4/6	---	---		20	Mod. to well lithified	Weathered lava flow or interflow zone	Weak to none	Possible paleosoil
1140 - 1150	Grayish black N2	---	---		---	Well lithified	Lava flow (basalt or andesite); some silica & calcite in fractures & vesicles	Weak to none	
1150 - 1160	Grayish black N2	---	---		---	Well lithified	Lava flow (basalt or andesite); some silica & calcite in fractures & vesicles	Weak to none	
1160 - 1170	Grayish black N2	---	---		---	Well lithified	Lava flow (basalt or andesite); some silica & calcite in fractures & vesicles	Weak to none	
1170 - 1180	Grayish black N2	---	---		20	Well lithified	Lava flow (basalt or andesite); some silica & calcite in fractures & vesicles	Weak to none	
1180 - 1190	Grayish black N2	---	---		tr	Well lithified	Lava flow (basalt or andesite); some silica & calcite in fractures & vesicles	Weak to none	
1190 - 1200	Grayish black N2 Mod. reddish brn 10R 4/6	---	---		10	Mod. to well lithified	Lava flow (basalt or andesite); some silica & calcite in fractures & vesicles with weathered red scoria	Weak to none	
1200 - 1210	Mod. reddish brn 10R 4/6	---	10		90	Poorly lithified	Clay	Weak to none	

Date: 3-24-05
Observer: EW Peacock

Well Registration #: 55-901789
Location: B(21-18)34dba

LITHOLOGIC DESCRIPTION FOR DRILL CUTTINGS SAMPLES

GV-1 Production Well

DEPTH INTERVAL (feet)	DOMINANT COLOR(S)	SIZE DISTRIBUTION (percent - estimated)				LITHIFICATION	GROSS LITHOLOGY OR LITHOLOGY OF GRAVEL FRACTION	REACTION TO ACID (10% HCl)	COMMENTS
		GRAVEL	SAND & ROUNDNESS		SILT + CLAY				
1210 - 1220	Pale reddish brn 10R 5/4	---	10		90	Poorly lithified	Clay	Weak to none	
1220 - 1230	Yellowish gray 5Y 8/1	30	10		60	Poorly lithified	Clay and weathered volcanic sand and gravel	Weak to none	
1230 - 1240	Lt. brownish gray 5YR 6/1	10	10		80	Poorly lithified	Clay and weathered volcanic sand and gravel	Weak to none	
1240 - 1250	Pale yellowish brn 10YR 6/2	10	10		80	Poorly lithified	Clay and weathered volcanic sand and gravel	Weak to none	
1250 - 1260	Pale yellowish brn 10YR 6/2	tr	40		60	Poorly lithified	Sandy clay (sand predominantly qtz)	Weak to none	
1260 - 1270	Pale yellowish brn 10YR 6/2	---	---		100	Poorly lithified	Clay	Weak to none	
1270 - 1280	Brownish gray 5YR 4/1	---	---		tr	Well lithified	Lava flow (basalt and andesite); silica filling in vugs	Weak to none	Abundant amorphous green siliceous mineral in vugs (zeolite)
1280 - 1290	Brownish black 5YR 2/1	---	---		tr	Poorly lithified	Lava flow (basalt and andesite)	Weak to none	
1290 - 1300	Pale yellowish brn 10YR 6/2	20	10		70	Poorly lithified	Sandy gravelly clay; gravel predominantly angular to sub-angular qtz.	Weak to none	
1300 - 1310	Pale yellowish brn 10YR 6/2	20	10		70	Poorly lithified	Sandy gravelly clay; gravel predominantly angular to sub-angular qtz.	Weak to none	
1310 - 1320	Pale yellowish brn 10YR 6/2	tr	tr		100	Poor to Mod.	Clay	Weak to none	
1320 - 1330	Pale yellowish brn 10YR 6/2	tr	tr		100	Poor to Mod.	Clay	Weak to none	
1330 - 1340	Pale yellowish brn 10YR 6/2	20	10		70	Poor to Mod.	Gravelly clay (qtz, feldspar, trace volcanics); sub-angular to sub-rounded	Weak to none	
1340 - 1350	Pale yellowish brn 10YR 6/2	20	10		70	Poor to Mod.	Gravelly clay (qtz, feldspar, trace volcanics); angular to sub-angular	Weak to none	

LITHOLOGIC DESCRIPTION FOR DRILL CUTTINGS SAMPLES

Well Registration #: 55-901789
Location: B(21-18)34dba

Date: 3-24-05
Observer: EW Peacock

GV-1 Production Well

DEPTH INTERVAL (feet)	DOMINANT COLOR(S)	SIZE DISTRIBUTION (percent - estimated)				LITHIFICATION	GROSS LITHOLOGY OR LITHOLOGY OF GRAVEL FRACTION	REACTION TO ACID (10% HCl)	COMMENTS
		GRAVEL	SAND & ROUNDNESS		SILT + CLAY				
1350 - 1360	Pale yellowish brn 10YR 6/2	20	10		70	Poor to Mod.	Gravelly clay (qtz, feldspar, trace volcanics); angular to sub-angular	Weak to none	
1360 - 1370	Pale yellowish brn 10YR 6/2	10	20		70	Poor to Mod.	Gravelly clay (qtz, feldspar, trace volcanics); angular to sub-angular	Weak to none	
1370 - 1380	Lt. brn 5YR 6/4	60	20		20	Poor to Mod.	Clayey sandy gravel (qtz, feldspar, decomp. granite, trace volcanics); sub-rounded to sub-angular	Weak to none	
1380 - 1390	Pale yellowish brn 10YR 6/2	60	20		20	Poor to Mod.	Clayey sandy gravel (qtz, feldspar, decomp. granite, trace volcanics); sub-rounded to sub-angular	Weak to none	
1390 - 1400	Pale yellowish brn 10YR 6/2	60	20		20	Poor to Mod.	Clayey sandy gravel (qtz, feldspar, decomp. granite, trace volcanics); sub-rounded to sub-angular	Weak to none	
1400 - 1410	Pale yellowish brn 10YR 6/2	60	20		20	Poor to Mod.	Clayey sandy gravel	Weak to none	
1410 - 1420	Lt. brn 5YR 6/4	60	20		20	Poor to Mod.	Clayey sandy gravel	Weak to none	
1420 - 1430	Pale yellowish brn 10YR 6/2	60	20		20	Poor to Mod.	Clayey sandy gravel	Weak to none	
1430 - 1440	Pale yellowish brn 10YR 6/2	60	20		20	Poor to Mod.	Clayey sandy gravel	Weak to none	
1440 - 1450	Brownish black 5YR 2/1				tr	Well lithified	Lava flow (basalt or andesite)	Weak to none	
1450 - 1460	Brownish black 5YR 2/1 Pinkish gray 5YR 8/1				10?	Well lithified	Lava flow (basalt or andesite) with unusual white clay	Weak to none	
1460 - 1470	Brownish black 5YR 2/1					Well lithified	Lava flow (basalt or andesite) with unusual white clay	Weak to none	
1470 - 1480	Lt. brown 5YR 5/6	20	20		60	Mod.	Sandy gravelly clay; with qtz, granite & volcanic gravel; angular to sub-angular	Weak to none	
1480 - 1490	Lt. brown 5YR 5/6	20	20		60	Mod.	Sandy gravelly clay; with qtz, granite & volcanic gravel; angular to sub-angular	Weak to none	

Date: 3-24-05
Observer: EW Peacock

Well Registration #: 55-901789
Location: B(21-18)34dba

LITHOLOGIC DESCRIPTION FOR DRILL CUTTINGS SAMPLES

GV-1 Production Well

DEPTH INTERVAL (feet)	DOMINANT COLOR(S)	SIZE DISTRIBUTION (percent - estimated)				LITHIFICATION	GROSS LITHOLOGY OR LITHOLOGY OF GRAVEL FRACTION	REACTION TO ACID (10% HCl)	COMMENTS
		GRAVEL	SAND & ROUNDNESS		SILT + CLAY				
1490 - 1500	Lt. brown 5YR 5/6	20	20		60	Mod.	Sandy gravelly clay; with qtz, granite & volcanic gravel; angular to sub-angular	Weak to none	
1500 - 1510	Pale brown 5YR 5/2	---	---		60	Well lithified	Weathered lava flow rock (basalt or andesite)	Weak to none	
1510 - 1520	Grayish brown 5YR 3/2	---	---		10	Well lithified	Lava flow rock (basalt or andesite); altered or weathered	Weak to none	
1520 - 1530	Grayish brown 5YR 3/2	---	---		10	Well lithified	Lava flow rock (basalt or andesite); altered or weathered	Weak to none	
1530 - 1540	Grayish brown 5YR 3/2	---	---		10	Well lithified	Lava flow rock (basalt or andesite); altered or weathered	Weak to none	Green amorphous mineral in fractures
1540 - 1550	Grayish brown 5YR 3/2	---	---		10	Well lithified	Lava flow rock (basalt or andesite); altered or weathered	Weak to none	
1550 - 1560	Pale reddish brn 10R 5/4	---	---		tr	Well lithified	granitic bedrock; fractured, angular, fresh chips	Weak to none	
1560 - 1570	Pale reddish brn 10R 5/4	---	---		tr	Well lithified	granitic bedrock; fractured, angular, fresh chips	Weak to none	
1570 - 1580	Pale reddish brn 10R 5/4	---	---		tr	Well lithified	granitic bedrock; fractured, angular, fresh chips	Weak to none	
1580 - 1591	Pale reddish brn 10R 5/4	---	---		tr	Well lithified	granitic bedrock; fractured, angular, fresh chips	Weak to none	Total Depth 1591 feet

Total depth drilled was 1591 feet below land surface.

Notes:

1) Color descriptions given are referenced to Munsell Color Charts (Geological Society of America 1991)

2) Abbreviations:

SA = sub-angular	lt = light
SR = sub-rounded	mod = moderate
R = rounded	dk = dark
F = fine	orng = orange
C = coarse	brn = brown
tr = trace	

ERROL L. MONTGOMERY & ASSOCIATES, INC.

ERROL L. MONTGOMERY & ASSOCIATES, INC.

APPENDIX C

WATER QUALITY DATA SACRAMENTO VALLEY BASIN
(FROM ADEQ OPEN FILE REPORT 01-04, JUNE 2001)

CONTENTS

APPENDIX C

Table

C-1 LOCATIONS FOR 1999 ADEQ WATER QUALITY SAMPLES, SACRAMENTO VALLEY BASIN

C-2 RESULTS FOR 1999 ADEQ WATER QUALITY SAMPLES - SACRAMENTO VALLEY BASIN, COMMON CONSTITUENTS AND ROUTINE PARAMETERS

C-3 RESULTS FOR 1999 ADEQ WATER QUALITY SAMPLES - SACRAMENTO VALLEY BASIN, TRACE CONSTITUENTS

C-4 RESULTS FOR 1999 ADEQ WATER QUALITY SAMPLES - SACRAMENTO VALLEY BASIN, OTHER CONSTITUENTS

TABLE C-1. LOCATIONS FOR 1999 ADEQ WATER QUALITY SAMPLES
SACRAMENTO VALLEY BASIN

ADEQ Site ID	Cadastral Location	Latitude	Longitude	ADWR Well ID	ADEQ Well ID	Sample Type	Well Depth (feet)	Depth to Water (feet)	Aquifer	Geology
SV-01	(B-19-19) 17ddd	35° 01' 53.891"	114° 19' 02.079"	517211	57599	Random	200	45	Hardrock	volcanic
SV-02	(B-21-19) 33cbd	35° 09' 35.757"	114° 19' 16.134"	534212	57746	Random	245	124	Hardrock	volcanic
SV-03	(B-21-17) 35bbc	35° 10' 08.014"	114° 04' 16.996"	632772	48679	Random	175	75	Hardrock	volcanic
SV-04/05	(B-20-16) 10dbc	35° 07' 43.378"	113° 57' 27.879"	555437	57747	Random	202	80	Hardrock	volcanic
SV-06	(B-22-17) 30ca	35° 15' 46.053"	114° 08' 27.853"	602518	57745	Random	175	40	Hardrock	granite
SV-07	(B-22-19) 11bdd	35° 18' 34.743"	114° 16' 57.802"	506879	48705	Random	200	60	Hardrock	volcanic
SV-09	(6-22-20) 13bcb	35° 17' 48.503"	114° 22' 37.395"	none	21921	Random	spring	spring	Hardrock	volcanic
SV-10	(B-23-18) 03add	35° 25' 07.703"	114° 11' 31.628"	508555	57744	Random	100	30	Hardrock	granite
SV-13	(B-20-19) 09cac	35° 07' 40.595"	112° 16' 05.254"	560184	57779	Random	365	160	Alluvial	alluvial
SV-15	(B-21-20) 02dcb	35° 13' 48.761"	114° 22' 57.467"	none	21793	Random	spring	spring	Hardrock	volcanic
SV-16	(6-20-18) 23cad	35° 06' 12.965"	114° 10' 02.209"	543553	57782	Random	900	600	Alluvial	alluvial
SV-17/20	(B-19-17) 16ac	35° 01' 56.483"	114° 04' 25.800"	805603	57781	Random	N/A	45	Alluvial	alluvial
SV-18	(B-19-18) 05bda	35° 03' 55.179"	114° 13' 12.908"	529616	57784	Random	625	513	Alluvial	alluvial
SV-21/22	(6-19-16) 07ddc	35° 02' 16.378"	114° 00' 22.030"	638923	21387	Random	N/A	N/A	Hardrock	granite
SV-23	(6-18-17) 11ccc	34° 57' 08.137	114° 03' 12.992"	805611	57785	Random	N/A	N/A	Alluvial	alluvial
SV-24/25/26	(6-16-20) 14cab	34° 43' 33.451"	114° 25' 59.761"	628108	57955	Random	396	217	Alluvial	alluvial
SV-27	(6-17-18) 25adb	34° 49' 55.865"	114° 08' 34.050"	628123	48451	Random	800	305	Alluvial	alluvial
SV-28	(6-21-16) 28bcd	35° 10' 38.430"	113° 59' 24.456"	528814	57954	Random	800	580	Hardrock	volcanic
SV-29/30	(B-18-18) 20cdc	34° 55' 38.342"	114° 13' 16.936"	none	21174	Random	spring	spring	Hardrock	volcanic
SV-31	(B-20-17) 14bcd	35° 07' 02.581"	114° 02' 59.503"	none	21572	Random	spring	spring	Hardrock	granite
SV-32	(B-18-19) 09abb	34° 58' 00.544"	114° 18' 18.915"	none	57952	Random	spring	spring	Hardrock	volcanic
SV-33	(B-15-14) 08adb	34° 39' 26.767"	113° 44' 27.775"	614802	57826	Random	383	75	Hardrock	granite
SV-34	(B-15-14) 20aab	34° 38' 03.497"	113° 44' 26.727"	642277	57934	Targeted	N/A	N/A	Hardrock	granite
SV-35	(B-14-15) 02aab	34° 35' 26.483"	113° 47' 41.306"	645966	57935	Random	150	20	Hardrock	granite
SV-36	(B-13-15) 12acb	34° 26' 12.347"	113° 50' 07.678"	645970	57936	Random	20	16	Hardrock	volcanic
SV-37	(B-13-16) 26dbc	34° 26' 05.015"	113° 54' 14.937"	645969	57937	Random	100	50	Hardrock	metamorphic
SV-38	(B-14-15) 13dda	34° 32' 58.946"	113° 46' 29.437"	645965	57942	Targeted	150	20	Hardrock	granite
SV-39	(B-15-15) 15bcb	34° 38' 37.824"	113° 49' 31.242"	645967	57943	Random	300	50	Hardrock	granite
SV-40	(B-15-15) 15bcb	34° 38' 36.689"	113° 49' 30.570"	645968	57944	Targeted	140	80	Hardrock	granite
SV-41	(B-16-15) 36dbc	34° 40' 59.143"	113° 46' 47.038"	614815	57945	Random	145	75	Hardrock	granite
SV-42	(B-17-16) 02bbc	34° 53' 14.792"	113° 56' 38.956"	none	57946	Random	spring	spring	Hardrock	granite
SV-43	(B-18-16) 26acc	34° 54' 49.909"	113° 56' 27.582"	none	57947	Random	spring	spring	Hardrock	granite
SV-44/45	(B-21-18) 32bbb	35° 10' 08.512"	114° 14' 03.048"	623083	57948	Random	1,355	820	Alluvial	alluvial
SV-46	(B-15-16) 01cab	34° 40' 05.766"	113° 53' 26.851"	none	57949	Random	N/A	N/A	Alluvial	alluvial
SV-48	(B-16-16) 14bcb	34° 43' 47.861"	113° 54' 43.950"	618231	57820	Random	275	N/A	Hardrock	granite
SV-49	(B-17-17) 31dbb	34° 48' 39.230"	114° 06' 58.653"	601492	48448	Random	450	400	Alluvial	alluvial
SV-50/51	(B-16-19) 01cac	34° 45' 13.633"	114° 12' 20.631"	543918	57822	Random	185	100	Alluvial	alluvial
SV-52	(B-15-19) 07aab	34° 39' 39.828"	114° 17' 04.022"	629451	20328	Random	900	473	Alluvial	alluvial
SV-53	(B-16.5-18) 27aba	34° 47' 33.998"	114° 07' 46.651"	543765	57824	Random	465	380	Alluvial	alluvial
SV-55	(B-15-18) 30dda	34° 36' 34.144"	114° 10' 44.003"	803930	57863	Random	205	90	Hardrock	metamorphic
SV-56	(B-15-18) 30	34° 37' 01.084"	114° 10' 53.481"	803931	57864	Targeted	>250	>250	Hardrock	metamorphic
SV-57/58	(B-14-17) 12baa	34° 34' 26.344"	113° 59' 35.053"	539067	57865	Random	807	675	Alluvial	alluvial
SV-60/61	(B-16-21) 36cbb	34° 43' 33.717"	114° 27' 48.053"	531890	57956	Random	720	174	Alluvial	alluvial
SV-62	(B-24-18) 33bba	35° 25' 55.607"	114° 12' 49.468"	801522	57957	Random	50	35	Hardrock	granite
SV-63	(B-23-18) 03bbb	35° 24' 56.292"	114° 11' 43.413"	510970	57958	Targeted	120	35	Hardrock	granite
SV-64	(B-23-18) 03bba	35° 25' 04.229"	114° 11' 38.743"	514003	57959	Targeted	140	30	Hardrock	granite
SV-65	(B-23-18) 03bdc	35° 24' 54.411"	114° 11' 41.115"	531300	57960	Targeted	300	57	Hardrock	granite
SV-67	(B-23-18) 03bcb	35° 24' 53.158"	114° 12' 00.443"	801415	57961	Targeted	120	20	Hardrock	granite

ADEQ = Arizona Department of Environmental Quality
ADWR = Arizona Department of Water Resources
ID = identifier
N/A = not available
> = greater than

Appendix C - Water Quality Data from ADEQ.xls
Source: ADEQ Open File Report 01-04, June 2001

TABLE C-2. RESULTS FOR 1999 ADEQ WATER QUALITY SAMPLES - SACRAMENTO VALLEY BASIN
COMMON CONSTITUENTS AND ROUTINE PARAMETERS

ADEQ Site ID	ADEQ Site ID	Temperature (°C)	pH-field (su)	SEC-field (uS/cm)	SEC-lab (uS/cm)	TDS (mg/L)	Hardness (mg/L)	Turbidity (NTU)	Calcium (mg/L)	Magnesium (mg/L)	Sodium (mg/L)	Potassium (mg/L)	Bicarbonate (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)	TKN (mg/L)	Ammonia (as N) (mg/L)	Phosphorus (mg/L)
SV-01	57599	21.58	7.73	829.	680.	430.	260.	0.11	71.	22.	48.	6.7	290.	38.	33.	0.12	ND	ND	ND	ND
SV-02	57746	23.59	7.35	674.	650.	420.	220.	0.34	72.	11.	68.	2.1	270.	51.	40.	4.5	ND	ND	ND	0.058
SV-03	48679	17.37	7.55	502.	430.	300.	190.	0.14	53.	13.	26.	7.5	210.	24.	20.	3.5	ND	ND	ND	ND
SV-04/05	57747	21.18	7.45	873.	780.	490.	390.	0.15	77.5	47.	30.	5.1	350.	71.	40.5	1.35	ND	ND	ND	ND
SV-06	57745	18.6	7.4	1,471.	1,300.	890.	500.	0.21	110.	49.	130.	8.	450.	80.	200.	18.	ND	0.39	0.035	ND
SV-07	48705	23.15	7.5	1,040.	980.	630.	370.	0.12	110.	26.	64.	6.2	200.	120.	70.	28.	ND	0.16	0.029	ND
SV-09	21921	20.78	7.68	373.	360.	230.	190.	0.13	50.	17.	12.	2.	200.	13.	14.	2.6	ND	0.097	0.021	0.022
SV-10	57744	18.52	7.25	1,248.	1,100.	750.	500.	0.01	140.	38.	73.	2.5	350.	91.	180.	4.8	ND	0.15	ND	ND
SV-13	57779	25.75	7.29	628.	540.	360.	150.	0.06	41.	11.	67.	2.4	210.	51.	33.	3.2	ND	ND	ND	0.024
SV-15	21793	18.13	7.49	510.	380.	270.	120.	0.17	37.	9.9	30.	1.6	160.	25.	20.	3.4	ND	0.08	ND	0.031
SV-16	57782	34.58	7.63	398.	390.	280.	140.	0.04	35.	14.	33.	5.3	150.	27.	36.	2.6	ND	ND	ND	ND
SV- 17/20	57781	27.74	7.03	995.	905.	595.	350.	2.19	110.	20.	60.5	3.4	240.	97.5	86.	11.	ND	ND	ND	ND
SV-18	57784	30.58	8.01	347.	330.	220.	86.	0.12	22.	8.3	46.	5.1	160.	14.	15.	2.8	ND	ND	ND	ND
SV-21/22	21387	22.22	7.18	1,456.	1,245.	847.	480.	0.01	102.5	53.5	102.	3.15	455.	90.	180.5	0.083	ND	0.077	ND	ND
SV-23	57785	23.95	6.96	809.	690.	450.	280.	3.9	78.	21.	52.	1.6	320.	44.	57.	ND	ND	ND	ND	ND
SV-24/25/26	57955	24.7	8.	1,266.	1,100.	670.	125.	0.43	42.5	4.75	180.	5.35	99.	240.	74.5	2.2	ND	ND	ND	ND
SV-27	48451	26.24	7.9	575.	520.	390.	160.	0.76	32.	20.	48.	4.6	160.	54.	41.	2.4	ND	ND	ND	ND
SV-28	57954	29.74	7.94	469.	450.	280.	170.	0.05	29.	22.	36.	5.4	180.	31.	35.	0.52	ND	ND	ND	ND
SV-29/30	21174	21.7	7.44	478.	400.	290.	140.	0.03	36.	11.	30.	6.9	160.	25.	20.	6.1	ND	ND	ND	ND
SV-31	21572	16.27	7.13	834.	630.	410.	250.	6.2	62.	24.	30.	6.1	180.	64.	43.	6.8	ND	0.1	ND	ND
SV-32	57952	15.72	8.26	875.	650.	440.	310.	3.4	59.	39.	27.	4.	330.	39.	31.	1.9	ND	0.21	ND	ND
SV-33	57826	21.36	7.41	1,345.	1,100.	720.	320.	7.8	79.	28.	140.	5.	320.	110.	160.	0.086	ND	0.069	ND	ND
SV-34	57934	19.99	6.91	2,360.	2,700.	1,900.	900.	1.	240.	74.	280.	7.4	410.	390.	570.	0.73	ND	0.21	ND	ND
SV-35	57935	12.19	7.67	1,019.	1,000.	630.	100.	0.5	32.	5.7	210.	2.9	380.	76.	85.	5.8	ND	0.17	ND	ND
SV-36	57936	26.21	7.67	910.	900.	550.	110.	12.	37.	3.6	180.	5.5	330.	80.	76.	1.2	ND	0.099	ND	ND
SV-37	57937	23.68	7.61	537.	540.	330.	230.	0.42	81.	8.1	28.	5.3	230.	24.	28.	7.1	ND	ND	ND	ND
SV-38	57942	21.51	7.03	1,346.	1,400.	830.	490.	4.2	130.	35.	110.	3.7	300.	240.	110.	0.99	ND	0.072	ND	ND
SV-39	57943	22.21	6.87	2,560.	2,700.	1,800.	1,000.	0.4	220.	110.	220.	13.	390.	420.	480.	0.93	ND	0.13	ND	ND
SV-40	57944	21.9	6.77	4,630.	5,200.	3,700.	1,900.	2.4	420.	250.	470.	21.	400.	940.	1,300.	6.	ND	0.31	ND	ND
SV-41	57945	18.46	7.05	1,890.	1,900.	1,400.	800.	12.	160.	98.	150.	5.8	390.	120.	600.	ND	ND	ND	ND	ND
SV-42	57946	18.57	7.12	1,256.	1,300.	830.	390.	0.15	110.	26.	150.	3.2	370.	110.	200.	0.14	ND	ND	ND	ND
SV-43	57947	12.64	7.56	934.	970.	630.	380.	2.6	88.	37.	84.	1.1	410.	45.	140.	ND	ND	0.23	ND	0.097
SV-44/45	57948	36.22	7.67	457.	460.	305.	150.	0.12	37.	12.	39.	11.	160.	31.5	44.5	2.3	ND	ND	ND	ND
SV-46	57949	22.31	7.49	879.	900.	540.	270.	6.1	79.	16.	92.	2.1	270.	98.	88.	0.35	ND	ND	ND	ND
SV-48	57820	18.67	7.19	613.	590.	350.	270.	0.41	74.	14.	48.	1.4	270.	37.	43.	0.027	ND	0.15	ND	ND
SV-49	48448	29.92	7.88	396.	370.	230.	120.	0.14	34.	7.1	44.	2.2	150.	17.	15.	7.5	ND	ND	ND	ND
SV-50/51	57822	27.14	7.72	512.	485.	315.	170.	0.03	39.5	15.	44.	4.7	160.	47.	44.5	2.6	ND	0.066	ND	ND
SV-52	20328	29.09	7.95	433.	400.	260.	110.	0.95	30.	8.	53.	4.4	160.	20.	40.	4.4	ND	0.11	ND	ND
SV-53	57824	25.96	7.63	506.	480.	280.	170.	0.13	45.	11.	43.	3.1	150.	48.	40.	1.8	ND	ND	ND	ND
SV-55	57863	24.79	7.79	501.	450.	300.	140.	36.	35.	13.	44.	15.	220.	33.	14.	ND	ND	3.5	1.7	0.2
SV-56	57864	25.32	7.58	2,310.	2,200.	1,800.	1,100.	7.	280.	84.	180.	7.2	170.	200.	920.	1.6	ND	0.33	ND	0.021
SV-57/58	57865	29.97	8.29	464.	450.	290.	72.	0.39	16.5	7.55	78.	5.95	170.	29.	37.	3.55	ND	0.69	ND	ND
SV-60/61	57956	42.42	7.8	1,830.	1,700.	1,100.	130.	0.09	45.5	1.6	350.	6.65	100.	430.	110.	1.85	ND	0.59	ND	ND
SV-62	57957	23.89	7.16	1,192.	1,100.	750.	390.	0.17	99.	34.	130.	2.5	450.	87.	160.	0.049	ND	ND	ND	ND
SV-63	57958	21.23	6.79	2,940.	2,800.	2,200.	1,200.	0.15	310.	110.	210.	5.4	280.	490.	660.	17.97	0.03	0.37	ND	ND
SV-64	57959	21.45	6.95	2,090.	1,900.	1,400.	640.	0.1	180.	47.	220.	2.6	400.	360.	210.	15.	ND	0.24	ND	ND
SV-65	57960	21.82	7.	2,560.	2,400.	1,900.	980.	0.32	260.	87.	220.	4.5	270.	350.	600.	19.	ND	0.33	ND	0.06
SV-67	57961	20.55	7.26	1,550.	1,400.	1,000.	460.	0.1	120.	42.	170.	1.6	480.	150.	220.	7.4	ND	0.2	ND	0.021

°C = degrees Celsius
as N = as nitrogen
ID = identifier

mg/L = milligrams per liter
ND = not detected above the minimum reporting level
NTU = nephalometer turbidity unit
SEC = specific electrical conductivity

su = standard units
TDS = total dissolved solids content
TKN = total Kjeldahl nitrogen
uS/cm = microSeimens per centimeter

ERROL L. MONTGOMERY & ASSOCIATES, INC.

Appendix C - Water Quality Data from ADEQ.xls
Source: ADEQ Open File Report 01-04, June 2001

TABLE C-3. RESULTS FOR 1999 ADEQ WATER QUALITY SAMPLES - SACRAMENTO VALLEY BASIN
TRACE CONSTITUENTS

ADEQ Site ID	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Fluoride (mg/L)	Iron (mg/L)	Lead (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Selenium (mg/L)	Silver (mg/L)	Thallium (mg/L)	Zinc (mg/L)
SV-01	ND	ND	ND	ND	ND	0.14	ND	ND	ND	0.48	ND	ND	ND	ND	ND	ND	ND	ND
SV-02	ND	ND	ND	ND	ND	0.11	ND	ND	ND	0.74	ND	ND	ND	ND	ND	ND	ND	ND
SV-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.49	ND	ND	ND	ND	ND	ND	ND	0.47
SV-04/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND	0.25
SV-06	ND	ND	ND	ND	ND	0.35	ND	ND	ND	1.9	ND	ND	ND	ND	ND	ND	ND	ND
SV-07	ND	ND	ND	ND	ND	0.23	ND	ND	ND	0.92	ND	ND	ND	ND	0.0061	ND	ND	ND
SV-09	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SV-10	ND	ND	ND	ND	ND	0.18	ND	ND	ND	1.1	ND	ND	ND	ND	0.006	ND	ND	ND
SV-13	ND	ND	0.012	ND	ND	0.14	ND	ND	ND	0.47	ND	ND	ND	ND	ND	ND	ND	0.13
SV-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.4	ND	ND	ND	ND	ND	ND	ND	0.057
SV-16	ND	ND	ND	ND	ND	0.18	ND	ND	ND	1.3	ND	ND	ND	ND	ND	ND	ND	0.36
SV-17/20	ND	ND	ND	ND	ND	0.18	ND	ND	0.025	2.95	ND	ND	ND	ND	0.0081	ND	ND	0.089
SV-18	ND	ND	ND	ND	ND	ND	ND	0.019	ND	0.65	ND	ND	ND	ND	ND	ND	ND	0.085
SV-21/22	ND	ND	ND	ND	ND	0.18	ND	ND	ND	2.3	ND	ND	ND	ND	ND	ND	ND	ND
SV-23	ND	ND	ND	ND	ND	0.12	ND	ND	ND	2.3	ND	ND	ND	ND	ND	ND	ND	ND
SV- 24/25/26	ND	ND	ND	ND	ND	0.615	ND	ND	ND	4.55	ND	ND	ND	ND	ND	ND	ND	ND
SV-27	ND	ND	ND	ND	ND	0.16	ND	0.033	ND	0.95	ND	ND	ND	ND	ND	ND	ND	ND
SV-28	ND	ND	ND	ND	ND	0.14	ND	0.017	ND	1.2	ND	ND	ND	ND	ND	ND	ND	0.29
SV-29/30	ND	ND	ND	ND	ND	0.12	ND	ND	ND	0.37	ND	ND	ND	ND	ND	ND	ND	ND
SV-31	ND	ND	ND	ND	ND	0.14	ND	ND	ND	0.55	ND	ND	ND	ND	ND	ND	ND	ND
SV-32	ND	ND	ND	ND	ND	0.11	ND	ND	ND	0.44	ND	ND	ND	ND	ND	ND	ND	ND
SV-33	ND	ND	ND	ND	ND	0.18	ND	ND	ND	3.2	0.42	ND	ND	ND	ND	ND	ND	0.22
SV-34	ND	ND	0.011	ND	ND	0.38	ND	ND	0.013	1.8	0.1	ND	ND	ND	0.01	ND	ND	0.062
SV-35	ND	ND	ND	ND	ND	0.6	ND	ND	0.019	5.7	ND	ND	ND	ND	ND	ND	ND	0.29
SV-36	ND	ND	ND	ND	ND	0.54	ND	ND	ND	1.6	ND	ND	ND	ND	ND	0.0058	ND	0.58
SV-37	ND	ND	ND	ND	ND	0.14	ND	ND	ND	0.51	ND	ND	ND	ND	ND	ND	ND	0.41
SV-38	ND	ND	ND	ND	ND	0.28	ND	ND	ND	2.1	ND	ND	ND	ND	ND	0.0058	ND	0.75
SV-39	ND	ND	ND	ND	ND	0.49	ND	ND	ND	2.3	ND	ND	ND	ND	ND	0.0081	ND	0.97
SV-40	ND	ND	0.016	ND	ND	0.84	ND	ND	0.014	2.3	0.17	ND	ND	ND	ND	0.012	ND	0.23
SV-41	ND	ND	ND	ND	ND	0.2	ND	ND	ND	2.8	1.6	ND	0.064	ND	ND	ND	ND	0.25
SV-42	ND	ND	ND	ND	ND	0.18	ND	ND	ND	4.	ND	ND	ND	ND	ND	ND	ND	0.2
SV-43	ND	ND	ND	ND	ND	0.11	ND	ND	0.031	3.	ND	ND	ND	ND	ND	ND	ND	ND
SV-44/45	ND	ND	ND	ND	ND	0.14	ND	0.014	ND	0.6	ND	ND	ND	ND	ND	ND	ND	ND
SV-46	ND	ND	ND	ND	ND	0.18	ND	ND	ND	3.6	ND	ND	ND	ND	ND	ND	ND	0.64
SV-48	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.1	ND	ND	ND	ND	ND	ND	ND	ND
SV-49	ND	ND	ND	ND	ND	0.12	ND	ND	ND	0.87	ND	ND	ND	ND	ND	ND	ND	0.22
SV-50/51	ND	ND	ND	ND	ND	0.13	ND	0.032	ND	0.865	ND	ND	ND	ND	ND	ND	ND	ND
SV-52	ND	ND	ND	ND	ND	0.17	ND	ND	ND	0.55	ND	ND	ND	ND	ND	ND	ND	ND
SV-53	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.87	ND	ND	ND	ND	ND	ND	ND	0.62
SV-55	ND	ND	ND	ND	ND	0.2	ND	ND	ND	0.24	ND	ND	0.18	ND	ND	ND	ND	ND
SV-56	ND	0.0054	ND	ND	ND	ND	ND	ND	ND	0.81	ND	ND	ND	ND	0.015	ND	ND	ND
SV-57/58	ND	ND	ND	ND	ND	0.22	ND	0.042	ND	2.5	ND	0.0059	ND	ND	ND	ND	ND	ND
SV-60/61	ND	ND	0.021	ND	ND	0.775	ND	0.013	ND	5.9	ND	ND	ND	ND	ND	ND	ND	ND
SV-62	ND	ND	ND	ND	ND	0.22	ND	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND
SV-63	ND	0.0067	ND	ND	0.00052	0.29	ND	ND	ND	1.2	ND	ND	0.21	ND	0.011	ND	ND	ND
SV-64	ND	0.005	ND	ND	ND	0.35	ND	ND	ND	1.2	ND	ND	ND	ND	0.008	ND	ND	ND
SV-65	ND	0.0068	0.014	ND	ND	0.38	ND	ND	ND	1.2	0.7	ND	0.059	ND	0.0083	ND	ND	0.17
SV-67	ND	ND	0.011	ND	ND	0.32	ND	ND	ND	1.4	ND	ND	ND	ND	0.0078	ND	ND	ND

ID = identifier

mg/L = milligrams per liter
ND = not detected above the minimum reporting level

ERROL L. MONTGOMERY & ASSOCIATES, INC.

TABLE C-4. RESULTS FOR 1999 ADEQ WATER QUALITY SAMPLES - SACRAMENTO VALLEY BASIN
OTHER CONSTITUENTS

ADEQ Site ID	Gross Alpha (pCi/L)	Gross Beta (pCi/L)	Radium 226+228 (pCi/L)	Uranium (ug/l)	Perchlorate (mg/l)	d D (°/oo)	d15 N (°/oo)	d18 O (°/oo)	SDW VOCs (ug/l)
SV-01	-	-	-	-	ND	-71.5	8.39	-9.7	ND
SV-02	5.2+/- 1.1	< LLD	< LLD	-	ND	-72.5	1.61	-9.8	ND
SV-03	3.7+/-0.7	7.1+/-0.96	-	-	ND	-70.0	2.82	-9.1	ND
SV-04/05	12+/-1.8	6.9+/-1.0	<LLD	-	ND	-67.0	17.57	-8.3	ND
SV-06	6.4+/-0.74	11+/-1.1	<LLD	-	ND	-67.5	18.07	-8.7	ND
SV-07	-	-	-	-	0.0058	-64.5	5.58	-7.6	ND
SV-09	-	-	-	-	ND	-70.5	3.54	-9.4	ND
SV-10	73+/-1.7	39+/-1.5	7.8+/-1.1	56+/-4	ND	-71.5	7.65	-10.3	ND
SV-13	2.1+/-0.78	1.4+/-0.84	-	-	ND	-77.5	10.51	-10.7	ND
SV-15	1.8+/-0.64	9.1+/-0.94	-	-	0.006	-68.0	6.98	-9.4	ND
SV-16	<LLD	2.9+/-0.84	-	-	ND	-73.0	6.28	-10.1	ND
SV-17/20	18+/-0.76	4.9+/-1.0	<LLD	27+/-3.2	ND	-67.75	6.47	-8.7	ND
SV-18	2.6+/-0.66	4.4+/-0.86	-	-	0.021	-71.5	7.58	-9.9	ND
SV-21/22	40+/-1.1	12+/-1.1	<LLD	77+/-6.2	ND	-75.0	INS	-10.1	ND
SV-23	22+/-1.8	7.2+/-0.96	< LLD	25+/-2.2	ND	-80.0	INS	-10.7	ND
SV-24/25/26	7.4+/-0.63	5.8+/-1.2	-	-	ND	-72.3	5.29	-10	ND
SV-27	3.5+/-0.86	5.1+/-0.94	-	-	ND	-70.0	5.4	-9.9	ND
SV-28	5.4+/-0.94	6.6+/-0.94	< LLD	-	ND	-78.0	INS	-10.7	ND
SV-29/30	1.5+/-0.58	6.8+/-0.96	-	-	ND	-63.25	2.18	-8.15	ND
SV-31	-	-	-	-	ND	-72.0	3.37	-9.5	ND
SV-32	-	-	-	-	ND	-64.5	3.12	-8.1	ND
SV-33	-	-	-	-	ND	-79.0	INS	-10.5	ND
SV-34	30+/-1.6	18+/-1.7	<LLD	67+/-5.6	ND	-69.5	21.13	-9.4	ND
SV-35	33+/-1.7	18+/-1.2	<LLD	67+/-5.2	0.015	-62.0	9.38	-8.4	ND
SV-36	33+/-1.4	18+/-1.3	<LLD	48+/-4.4	ND	-66.5	13.23	-9.2	ND
SV-37	0.93+/-0.6	6.2+/-0.58	-	-	ND	-63.0	6.25	-8.9	ND
SV-38	-	-	-	-	ND	-72.0	5.43	-9.9	ND
SV-39	15+/-1.3	21+/-1.8	<LLD	45+/-5.8	ND	-66	7.57	-9.1	ND
SV-40	50+/-1.6	34+/-3.8	<LLD	45+/-6.4	ND	-66.5	5.82	-9	ND
SV-41	12+/-1.2	15+/-1.4	<LLD	22+/-2.4	ND	-69	INS	-9.1	ND
SV-42	96+/-2.6	33+/- 1.4	<LLD	220+/-17	ND	-75	INS	-10.7	ND
SV-43	53+/-2.0	22+/-1.2	<LLD	28+/-2.4	ND	-76.5	INS	-10.8	ND
SV-44/45	2.3+/-0.61	9.7+/-0.98	-	-	ND	-82.5	3.79	-11.3	ND
SV-46	53+/-2.0	69+/-1.7	20+/-2.6	160+7-11	ND	-74.5	17.98	-10.4	ND
SV-48	93+/-2.0	49+/-1.6	<LLD	120+/-9.2	ND	-76.5	34.59	-11	ND
SV-49	2.4+/-0.56	3.2+/-0.86	-	-	ND	-61	3.52	-8.8	ND
SV-50/51	3.5+/-0.48	4.2+/-0.87	-	-	ND	-71.75	8.57	-10.1	ND
SV-52	5.0+/-0.50	5.1+/-0.90	<LLD	-	ND	-56.5	9.53	-7.7	ND
SV-53	7.6+/-0.56	5.0+/-0.92	<LLD	-	ND	-68	14.42	-9.6	ND
SV-55	2.3+/-0.7	18+/-1.2	-	-	ND	-66.75	23.82	-10.2	ND
SV-56	-	-	-	-	ND	-67	7.68	-9.1	ND
SV-57/58	8+/-0.98	7.2+/-0.96	<LLD	-	ND	-74.5	7.86	-10.3	ND
SV-60/61	6.4+/-0.66	6.9+/-1.00	<LLD	-	ND	-75.75	10.39	-10.15	ND
SV-62	200+/-2.6	93+/-2.2	<LLD	230+/-14	ND	-74.5	13.52	-10.5	ND
SV-63	1100+/-5.8	600+/-7.4	23+/-1.6	1500+/-94	ND	-74.5	11.5	-10	ND
SV-64	140+/-2.2	76+-2.4	<LLD	330+7-22.0	ND	-74.5	8.48	-10.1	ND
SV-65	190+/-2.4	130+/-3.8	15+/-1.4	190+/-6.4	ND	-77	7.84	-10.4	ND
SV-67	160+/-2.2	74+/-2.0	<LLD	240+/-15	ND	-	-	-	ND

d15 N (°/oo) = delta Nitrogen 15 (per thousand)
d18 O (°/oo) = delta Oxygen 18 (per thousand)
dD (°/oo) = delta Dueterium (per thousand)
ID = identifier
INS = insufficient anlayte for analysis

LLD = Lower Limit of Detection
mg/L = milligrams per liter
ND = not detected above the minimum reporting level
pCi/L = picoCuries per liter
ug/L = micrograms per liter

ERROL L. MONTGOMERY & ASSOCIATES, INC.

APPENDIX D

THWELLS MODEL WELL LOCATIONS, AQUIFER PARAMETERS, PUMPING RATES, AND RESULTS

TABLE D-1. THWELLS MODEL WELL LOCATIONS, AQUIFER PARAMETERS, PUMPING RATES, AND RESULTS

WELL TYPE	X COORDINATE (UTM, meters)[a]	Y COORDINATE (UTM, meters)[a]	State Plane X (International Feet)	State Plane Y (International Feet)	MODEL PUMPING RATE (gpm)[d]	MODEL PUMPING RATE (gpd)[e]	Drawdown (feet)
GOLDEN VALLEY SOUTH MASTER PLANNED COMMUNITY WELLS							
Pumping Well 1	209050.14	3895369.87	19024.55	1521681.15	930	1,339,200	267.113
Pumping Well 2	207874.73	3894659.16	15190.68	1519314.46	930	1,339,200	275.976
Pumping Well 3	209583.18	3893866.43	20818.39	1516765.99	930	1,339,200	284.933
Pumping Well 4	209528.51	3892294.65	20686.59	1511608.91	930	1,339,200	288.211
Pumping Well 5	207806.39	3893087.38	15014.06	1514156.98	930	1,339,200	299.042
Pumping Well 6	206193.61	3893019.04	9726.22	1513884.08	930	1,339,200	280.570
Pumping Well 7	206193.61	3891870.96	9760.93	1510118.39	930	1,339,200	279.484
Pumping Well 8	207724.38	3891816.29	14783.51	1509985.34	930	1,339,200	295.923
Pumping Well 9	207683.38	3890217.17	14697.35	1504739.03	930	1,339,200	272.706
Pumping Well 10	208940.8	3890217.17	18821.7	1504777.03	930	1,339,200	270.061
West Image Wells							
Image Well W1	191316.42	3888919.9	-38946.26	1499989.56	930	1,339,200	---
Image Well W2	192673.78	3889130.39	-34500.61	1500720.94	930	1,339,200	---
Image Well W3	191873.8	3887425.31	-37072.95	1495104.29	930	1,339,200	---
Image Well W4	192925.47	3886255.92	-33588.26	1491300.56	930	1,339,200	---
Image Well W5	193735.92	3887969.78	-30981.81	1496946.32	930	1,339,200	---
Image Well W6	195015.76	3888953.52	-26813.77	1500211.58	930	1,339,200	---
Image Well W7	195753.33	3888073.7	-24368	1497348.13	930	1,339,200	---
Image Well W8	194615.36	3887048.37	-28069.48	1493950.77	930	1,339,200	---
Image Well W9	195674.12	3885849.26	-24560.63	1490049.72	930	1,339,200	---
Image Well W10	194710.51	3885041.44	-27696.81	1487371.05	930	1,339,200	---
East Image Wells							
Image Well E1	216759.29	3896008.1	44291.47	1524007.66	930	1,339,200	---
Image Well E2	218035.58	3895500.35	48493.14	1522380.84	930	1,339,200	---
Image Well E3	216480.74	3894437.47	43425.33	1518847.53	930	1,339,200	---
Image Well E4	216793.15	3892896.08	44496.63	1513801.17	930	1,339,200	---
Image Well E5	218361.46	3893961.21	49608.6	1517342.25	930	1,339,200	---
Image Well E6	219963.53	3894159.02	54857.51	1518039.52	930	1,339,200	---
Image Well E7	220152.33	3893026.57	55511.02	1514330.73	930	1,339,200	---
Image Well E8	218651.38	3892720.91	50597.05	1513282.79	930	1,339,200	---
Image Well E9	218954.8	3891150.31	51639.74	1508140.33	930	1,339,200	---
Image Well E10	217714.49	3890943.53	47577.71	1507424.6	930	1,339,200	---
North Image Wells							
Image Well N1	187295.94	3911688.82	-52822.84	1574547.48	930	1,339,200	---
Image Well N2	186942.51	3910361.48	-53941.73	1570183.28	930	1,339,200	---
Image Well N3	185703.4	3911779.88	-58048.93	1574797.84	930	1,339,200	---
Image Well N4	184209.71	3911287.59	-62933.1	1573137.88	930	1,339,200	---
Image Well N5	185452.64	3909856.07	-58812.97	1568480.41	930	1,339,200	---
Image Well N6	185838.31	3908288.59	-57500.42	1563350.98	930	1,339,200	---
Image Well N7	184736.09	3907967.34	-61105.8	1562263.92	930	1,339,200	---
Image Well N8	184255.27	3909421.67	-62726.99	1567019.34	930	1,339,200	---
Image Well N9	182731.51	3908934.85	-67709.93	1565376.44	930	1,339,200	---
Image Well N10	182379.66	3910142.05	-68900.59	1569325.18	930	1,339,200	---

[a] UTM, meters = Universal Transverse Mercator coordinates, in meters
[b] UTM, feet = UTM coordinates, converted to feet
[c] Coordinate in feet from origin
[d] gpm = Gallons per minute
[e] gpd = Gallons per day

T = 55,000 gpd/ft
S = 0.07
b = 550 feet
Unconfined Aquifer, English units
time = 100 years = 36525 days
max DD = 345 feet

March 2005
REPORT

REGIONAL HYDROGEOLOGY, SOURCE OF WATER SUPPLY, AND PROJECTED 100-YEAR DRAWDOWN IMPACTS IN THE VICINITY OF THE VILLAGES AT WHITE HILLS MOJAVE COUNTY, ARIZONA

Prepared for:

RHODES HOMES – ARIZONA LLC

REGISTERED GEOLOGIST
CERTIFICATE NO.
19807
WILLIAM R.
VICTOR
DATE SIGNED 3-18-05
ARIZONA U.S.A.

William R. Victor

Prepared by:

ERROL L. MONTGOMERY & ASSOCIATES, INC.
CONSULTANTS IN HYDROGEOLOGY

7949 EAST ACOMA DRIVE, SUITE 100
SCOTTSDALE, ARIZONA 85260 (480) 948-7747

TUCSON • PHOENIX • FLAGSTAFF • SANTIAGO de CHILE

A-20
Admitted

ERROL L. MONTGOMERY & ASSOCIATES, INC.

CONTENTS

APPLICATION FOR AN ANALYSIS OF ASSURED WATER SUPPLY, ARIZONA DEPARTMENT OF WATER RESOURCES

ATTACHMENTS

1 CERTIFICATE OF ASSURED WATER SUPPLY GENERIC DEMAND CALCULATOR

2 WHITE HILLS AREA PLAN AMENDMENT

3 NOTICE OF INTENT TO SERVE

4 OWNERSHIP DUCUMENTS

5 HYDROLOGIC STUDY

TABLES

1 WELL INVENTORY FOR DETRITAL VALLEY, MOHAVE COUNTY, ARIZONA

2 WATER QUALITY DATA ADWR GWSI DATABASE, DETRITAL VALLEY, MOHAVE COUNTY, ARIZONA

3 RESULTS FOR LABORATORY CHEMICAL ANALYSES FOR GROUNDWATER SAMPLES OBTAINED FROM WELLS IN AREA OF THE VILLAGES AT WHITE HILLS, MOHAVE COUNTY, ARIZONA

ILLUSTRATIONS

1 LOCATION MAP FOR DETRITAL VALLEY

2 GROUNDWATER LEVEL HYDROGRAPH FOR UPPER BASIN-FILL DEPOSITS AQUIFER, DETRITAL VALLEY

3 STIFF DIAGRAMS FOR UPPER BASIN-FILL DEPOSITS AQUIFER, DETRITAL BASIN

CONTENTS – continued

ILLUSTRATIONS

4 PROJECTED GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY, AVERAGE ANNUAL DTOTAL PUMPING RATE OF 8,225 ACRE-FEET PER YEAR

5 PROJECTED GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY, AVERAGE ANNUAL DTOTAL PUMPING RATE OF 16,500 ACRE-FEET PER YEAR

6 HYDROGRAPH OF GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY

APPENDICES

A WELL NUMBERING SYSTEM

B SELECTED WELL RECORDS AND DRILLER'S LOGS FOR DEEP WELLS

C ANALYTICAL MODEL – THWELLS PUMPING RATES, AND PUMPING AND IMAGE WELL LOCATIONS

Arizona Department of Water Resources
OFFICE OF ASSURED AND ADEQUATE WATER SUPPLY
500 NORTH THIRD STREET
PHOENIX, ARIZONA 85004-3921
(602) 417-2460

APPLICATION FOR AN ANALYSIS OF WATER ADEQUACY

(Refer to application guidelines for assistance in completing this form)

PART A - GENERAL INFORMATION

1. Name of development: The Villages at White Hills

2. Location: 27N (Township) 21 & 20 W (Range) 25, 16,20,21, 23, 30 (Section(s)) Mohave (County)

3. Owner Name: American Land Management, LLC Phone: 702-873-5582 Address: 4730 South Fort Apache Road, Suite 300, Las Vegas, NV 89147

4. Water Provider: (undecided) Phone: _____ Address: _____

5. Consultant Name: Errol L. Montgomery and Associates, Inc. Phone: 480-948-7747
Address: 7949 East Acome Drive, Suite 100, Scottsdale, AZ 85260

6. Primary Contact:
Name: Greg Wallace Phone: 602-818-2399
Address: 7949 East Acome Drive, Suite 100 Scottsdale, AZ. 85260

PART B - WATER DEMAND INFORMATION

1. Include a map of the proposed development, and reference as an attachment: Attachment 2

2. Number of lots: 30,464 Size of lots: 2700 Total Acreage: 2,705

3. Total demand projected for development: 15,689 acre-feet (AF) per year
Projected water demand per residential lot: 217 gallons per day
Non-Residential demands: Golf course: 600 AF/year Parks: 261 AF/year Lakes: _____ AF/year
Other (specify): commercial, schools, (2) parks 564 AF/year

4. Expected year of completion (build-out): 2014

PART C- WATER SUPPLY INFORMATION

1. Please indicate source(s) of water to be used: X Groundwater __ Surface Water __ Effluent
(If the sources includes non-groundwater supplies, please complete "Supplement C.")

2. Provide a hydrologic study, and reference the attachment: #5

3. a. Method of water distribution: X central distribution system ___ dry lot subdivision (individual wells)

   b. If water is to be obtained from a water provider, include a "Notice of Intent to Serve" agreement and reference the attachment: _____

4. If any wells proposed to serve the development are within one mile of a Water Quality Assurance Revolving Fund or Superfund site (or any monitor wells associated with the site), or if the proposed water supply fails to meet safe drinking water quality standards, provide a study identifying and describing this water and reference the attachment: N/A

5. If a "Letter of Water Availability" has previously been issued for this provide a copy of the document and reference the attachment: n/a

PART D - FEES

The application fee for an Analysis of Water Adequacy is $ 1,000. The payment may be made by cash, check, or in some cases, by entry in an existing Department fee credit account. Checks should be made payable to the Department of Water Resources. **Failure to enclose the required fees will cause the application to be returned.**

Fee for Application for Analysis of Water Adequacy: $ 1000.00

I DO HEREBY certify that the information contained in this application and all information accompanying it is true and correct to the best of my knowledge and belief.

see signature page _____ _____ _____

Owner Name (Please type or print) Signature Date

PART C- WATER SUPPLY INFORMATION

1. Please indicate source(s) of water to be used: __ Groundwater __ Surface Water __ Effluent
(If the sources includes non-groundwater supplies, please complete "Supplement C.")

2. Provide a hydrologic study, and reference the attachment: ____

3. a. Method of water distribution: ___ central distribution system ___ dry lot subdivision (individual wells)

   b. If water is to be obtained from a water provider, include a "Notice of Intent to Serve" agreement and reference the attachment: _____

4. If any wells proposed to serve the development are within one mile of a Water Quality Assurance Revolving Fund or Superfund site (or any monitor wells associated with the site), or if the proposed water supply fails to meet safe drinking water quality standards, provide a study identifying and describing this water and reference the attachment: _____

5. If a "Letter of Water Availability" has previously been issued for this provide a copy of the document and reference the attachment: _____

PART D - FEES

The application fee for an Analysis of Water Adequacy is $ 1,000. The payment may be made by cash, check, or in some cases, by entry in an existing Department fee credit account. Checks should be made payable to the Department of Water Resources. **Failure to enclose the required fees will cause the application to be returned.**

Fee for Application for Analysis of Water Adequacy: $ 1000.00

I DO HEREBY certify that the information contained in this application and all information accompanying it is true and correct to the best of my knowledge and belief.

Charles Sakura, Manager — Charles Sak — 2/16/05

Owner Name (Please type or print) — Signature — Date

American Land Management, LLC

AFFIDAVIT OF AUTHORITY

I, Charles Sakura, the undersigned authority, hereby declare under penalty of perjury that I have the right and the authority to execute any and all documents on behalf of American Land Management, LLC including but not limited to the Arizona Department of Water Resources Application for an Analysis of Water Adequacy together with any supplements thereto.

Dated this 16th day of February, 2005.

Charles Sakura, Manager
American Land Management, LLC

January 18, 2005

CERTIFICATE OF ASSURED WATER SUPPLY GENERIC DEMAND CALCULATOR

NSTRUCTIONS: This spreadsheet is designed to help you calculate the water demand for your new subdivision for purposes of applying for a Certificate of Assured Water Supply. Please fill out all blue boxes. If you need help, contact the Office of Assured and Adequate Water Supply at (602) 417-2465.

NOTE: This sheet, when completed, does not constitute approval of the demand estimate for your subdivision. It is intended for general estimation purposes only. Final official demand estimates will be determined by the Department upon review of your complete application.

Enter the AMA the subdivision is located in*: na

* Enter PHX for Phoenix, TUC for Tucson, PIN for Pinal, PRE for Prescott or SCR for Santa Cruz. If you are not located within an AMA, or are not sure which AMA you are located in, contact the Office of Assured and Adequate Water Supply at (602) 417-2465.

Residential Usage*

Category	PPHU	GPCD or per house/day	Demand/HU/YR (af/yr)	No. HU (Lots)	Residential Demand/Yr (af/yr)
Single Family (int)	2.47	70.00	0.22	27464.00	6042.08
Multi-Family (int)	2.40	57.00	0.15	8000.00	1225.89
Single Family Landscape (ext)	1.00	125.00	0.14	27464.00	3845.45
Multi-Family Landscape (ext)	1.00	100.00	0.11	8000.00	896.12
Single family Demand/HU/YR			0.36		
Multifamily Demand/HU/YR			0.27		

*NOTE: If the application is in the Pinal AMA, and lot sizes are no greater than 10,000 sq. ft., 125 GPCD is used to estimate both interior and exterior demand for single family homes. Do not enter lot numbers under the Landscape rows. Contact the Office of Assured and Adequate Water Supply for more information.

	Square Feet	Acres	Demand Factor (af/yr)	No. HU (Lots)	Large Lot Adjustment Demand/Yr (af/yr)
Average Lot Size (sq. ft)**	0.00	0.00			
TMP Model Lot Size (sq. ft)	7,500 - 10,000	0.17 - 0.23			
Large Lot Adjustment	0.00	0.00			
1/2 low water use	0.00	0.00	1.50		0.00
1/2 turf	0.00	0.00	No AMA	0.00	

**NOTE: If the subdivision contains several groupings of lot sizes, the large lot adjustment needs to be calculated for each grouping of large lot sizes. Contact the Office of Assured and Adequate Water Supply for assistance in calculating the large lot adjustment for subdivisions with several groupings of large lot sizes.

Total Residential Demand 12009.53

Non-Residential Usage

For each category please enter either square feet or acres of land for that type of non-residential use within your subdivision.

Category	Square Feet	Acres	Demand Factor (af/ac)		Non-Residential Demand (af/yr)
Common Area1		174.00	1.50	low water use	261.00
Common Area2		206.00	5.00	turf	1030.00
Right of Way		0.00	1.50	low water use	0.00
Golf Course		110.00	6.00	6.00	660.00
Commercial use		85.70	2.25	all acres	192.83
Public Pool (length x width = square feet)		0.00	AMA TMP model	pool	0.00
Parks1		0.00	1.50	low water use	0.00
Parks2		0.00	No AMA	turf	0.00
Retention/Detention Basins		0.00	1.50	low water use	0.00
Retention/Detention Basins		0.00	No AMA	turf	0.00
School Landscape1		0.00	1.50	low water use	0.00
School Landscape2		22.00	5.00	turf	110.00
School interior****		22.00	25 GPCD	interior demand	0.62

***NOTE: If application is for a change of ownership from a previously issued Certificate of Assured Water Supply, and is for only a portion of the original Certificate, contact the Office of Assured and Adequate Water Supply to pro-rate non-residential area acreage.

****NOTE: For school interior demand, enter the number of students. If the proposed school is a high school or middle school, the demand factor is 43 GPCD.

Total Non-Residential Demand 2243.00

Distribution Losses

	Residential	Non-Residential	Total	Loss Factor %	Distribution Losses (af/yr)
Demand af/yr	12009.53	2243.00	14252.53	10.00	1425.25

Construction

	No. of Lots	Demand (gals/lot)	100 yr demand (af)		Construction Demand (af/yr)
	35464.00	10000.00	1168.25		11.68

Total Demand Per Year

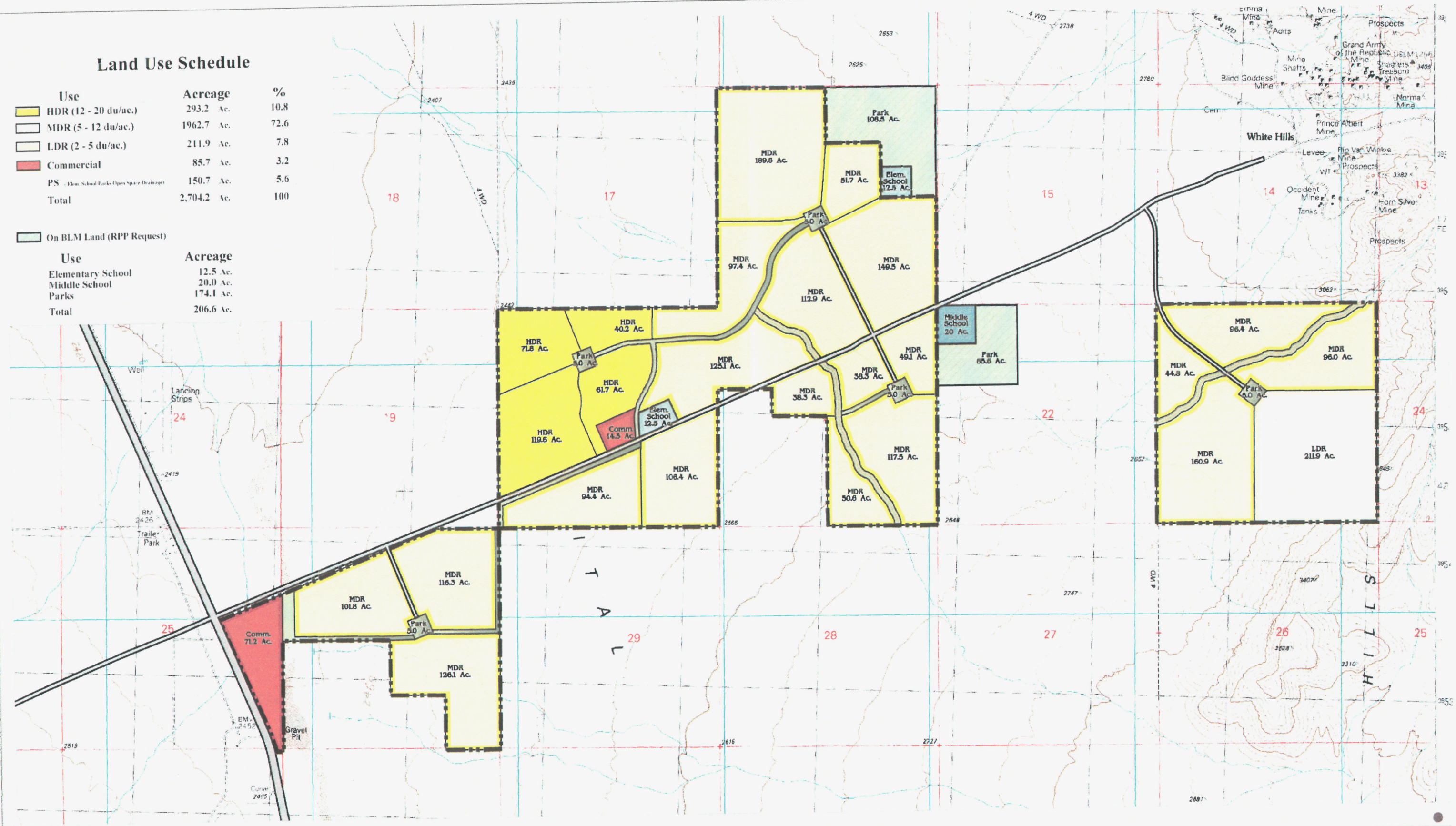
Residential Usage af/yr	Non-Residential Usage	Lost & Unaccounted for	Construction	Total Non-Res	Total Demand Per Year (af/yr)
12009.53	2243.00	1425.25	11.68	3679.94	15689.47
Residential Usage GPCD					**Total Demand GPCD**
123					161
Annual Build Out Demand					
15689.47					

Land Use Schedule

Use	Acreage		%
HDR (12 - 20 du/ac.)	293.2	Ac.	10.8
MDR (5 - 12 du/ac.)	1962.7	Ac.	72.6
LDR (2 - 5 du/ac.)	211.9	Ac.	7.8
Commercial	85.7	Ac.	3.2
PS (Elem. School/Parks/Open Space/Drainage)	150.7	Ac.	5.6
Total	2,704.2	Ac.	100

On BLM Land (RPP Request)

Use	Acreage
Elementary School	12.5 Ac.
Middle School	20.0 Ac.
Parks	174.1 Ac.
Total	206.6 Ac.



WHITE HILLS

MOHAVE COUNTY, ARIZONA

AREA PLAN AMENDMENT

RHODES HOMES

File: L:\White Hills\base dwg

The developer has reserved the right, without notice to make changes to this map and other aspects of the development to comply with governmental requirements and to fulfill its marketing objective.

SCALE : 1" = 1000'

0 250 500 1000

NORTH

02-17-05

rvi planning • landscape architecture
712 Congress Avenue, Suite 300
Austin, TX 78701
(512) 480-0092

All information furnished regarding this property is from sources deemed reliable. However, RVI has not made an independent investigation of these sources and no warranty or representation is made by RVI as to the accuracy thereof and same is submitted subject to errors, omissions, land plan changes, or other conditions. This land plan is conceptual in nature and does not represent any regulatory approval. Land plan is subject to change.

ARIZONA DEPARTMENT OF WATER RESOURCES

OFFICE OF ASSURED WATER SUPPLY
500 NORTH THIRD STREET
PHOENIX, ARIZONA 85004
(602) 417-2460

SUPPLEMENT TO APPLICATION FOR AN ANALYSIS OF ADEQUATE WATER SUPPLY

NOTICE OF INTENT TO SERVE

Municipal Water Provider Name (please type or print):_____

ADEQ Public Water System Number (please indicate the number valid for this subdivision):_____

Subdivision/Development Name: _____

The undersigned municipal water provider agrees to provide to the development indicated above an amount of water sufficient to satisfy the water demands of the development as stated in the application for an analysis of adequate water supply or water adequacy. This Notice of Intent to Serve is conditioned upon the provider's receipt of necessary approvals from the Arizona Corporation Commission and other regulatory agencies, and the provider's receipt of all necessary payments.

The municipal water provider, if a private water company, further attests that the subject development is either within the boundaries of the company's existing Certificate of Convenience and Necessity or that a formal request has been filed with the Arizona Corporation Commission to extend the boundaries to include the development.

This Notice of Intent To Serve Agreement is agreed to under the signature of an agent of the municipal water provider authorized to sign the agreement:

Name of Municipal Water Provider's authorized agent (please type or print): _____

_____ _____
Signature of Authorized Agent of Municipal Water Provider Date

POLICY OF TITLE INSURANCE
Issued by
Transnation Title Insurance Company
SCHEDULE A

Amount of Insurance: **$20,000.00** Policy/File No.: **01397017**

Date of Policy: **November 23, 2004 at Fee No. 2004-110220**

Name of Insured:

American Land Management, L.L.C., a South Dakota limited liability company

1. The estate or interest referred to herein is at the Date of Policy vested in:

   American Land Management, L.L.C., a South Dakota limited liability company

2. The estate or interest in the land described herein and which is covered by this policy is:

   A FEE

3. The land referred to in this policy is situated in the County of Mohave, State of ARIZONA, and is more particularly described in Exhibit "A" attached hereto and made a part hereof.

Countersigned:

BY: James Davison
Authorized Officer or Agent

EXHIBIT "A"

Lot 19, TRACT 27-27-20, FLANNERY & ALLEN TRACT, according to the plat recorded August 18, 1930, records of Mohave County, Arizona;

EXCEPT all oil, gas, coal and minerals as reserved in Deed recorded in Book 37 of Deeds, page 236, records of Mohave County, Arizona.

SCHEDULE B

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage, nor against costs, attorneys fees or expenses, any or all of which arise by reason of the following:

PART I

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices or such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.

3. Easements, liens or encumbrances, or claims thereof, which are not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortages in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, and agreements, covenants, conditions or rights incident thereto, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.

SCHEDULE B
EXCEPTIONS FROM COVERAGE

PART II

THIS POLICY DOES NOT INSURE AGAINST LOSS OR DAMAGE BY REASON OF THE FOLLOWING:

1. OBLIGATIONS imposed upon said land by its inclusion within any district formed pursuant to Title 48, Arizona Revised Statutes, excluding however Municipal or County Improvement Districts.

2. RESERVATIONS, exceptions, covenants, conditions and rights reserved or imposed in Deed from Santa Fe Pacific Railroad Company:

   Recorded in Book 37 of Deeds
   Page 236

3. EASEMENTS, restrictions, reservations and conditions as set forth on the recorded plat of said subdivision.

4. THE LACK of a legal right of access recorded in insurable form to and from said land to a public street.
   Notwithstanding the affirmative assurance of Paragraph 4, the Company is unwilling to insure access.

AFFIDAVIT OF AUTHORITY

I, Charles Sakura, the undersigned authority, hereby declare under penalty of perjury that I have the right and the authority to execute any and all documents on behalf of American Land Management, LLC including but not limited to the Arizona Department of Water Resources Application for an Analysis of Water Adequacy together with any supplements thereto.

Dated this 16th day of February, 2005.

Charles Sakura, Manager
American Land Management, LLC

AFFIDAVIT OF AUTHORITY

I, Charles Sakura, the undersigned authority, hereby declare under penalty of perjury that I have the right and the authority to execute any and all documents on behalf of American Land Management, LLC including but not limited to the Arizona Department of Water Resources Application for an Analysis of Water Adequacy together with any supplements thereto.

Dated this 16th day of February, 2005.

Charles Sakura, Manager
American Land Management, LLC

POLICY OF TITLE INSURANCE
Issued by
Transnation Title Insurance Company
SCHEDULE A

Amount of Insurance: **$80,000.00** Policy/File No.: **01394766**

Date of Policy: **November 1, 2004 at Fee No. 2004-102022**

Name of Insured:

American Land Management, L.L.C., a South Dakota Limited Liability Company

1. The estate or interest referred to herein is at the Date of Policy vested in:

   American Land Management, L.L.C., a South Dakota Limited Liability Company

2. The estate or interest in the land described herein and which is covered by this policy is:

   A FEE

3. The land referred to in this policy is situated in the County of Mohave, State of ARIZONA, and is more particularly described in Exhibit "A" attached hereto and made a part hereof.

Countersigned:

BY: James Davison
Authorized Officer or Agent

EXHIBIT "A"

Lots 1, 7, 26 and 123, Tract 27-27-20, FLANNERY AND ALLEN, according to the plat recorded August 18, 1930, records of Mohave County, Arizona;

EXCEPT all oil, gas, coal and minerals as reserved in Deed recorded in Book 37 of Deeds, page 236, records of Mohave County, Arizona.

SCHEDULE B

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage, nor against costs, attorneys fees or expenses, any or all of which arise by reason of the following:

PART I

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices or such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.

3. Easements, liens or encumbrances, or claims thereof, which are not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortages in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, and agreements, covenants, conditions or rights incident thereto, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.

SCHEDULE B

EXCEPTIONS FROM COVERAGE

PART II

THIS POLICY DOES NOT INSURE AGAINST LOSS OR DAMAGE BY REASON OF THE FOLLOWING:

1. OBLIGATIONS imposed upon said land by its inclusion within any district formed pursuant to Title 48, Arizona Revised Statutes, excluding however Municipal or County Improvement Districts.

2. RESERVATIONS, exceptions, covenants, conditions and rights reserved or imposed in Deed from Santa Fe Pacific Railroad Company:

   Recorded in Book 37 of Deeds
   Page 236

3. EASEMENTS, restrictions, reservations and conditions as set forth on the recorded plat of said subdivision.

4. MATTERS SHOWN ON SURVEY:

   Recorded in Book 18 of Record Surveys
   Page 65

5. THE LACK of a legal right of access recorded in insurable form to and from said land to a public street.

   Notwithstanding the affirmative assurance of paragraph 4, the Company is unwilling to insure access.

POLICY OF TITLE INSURANCE
Issued by
Transnation Title Insurance Company
SCHEDULE A

Amount of Insurance: **$180,000.00** Policy/File No.: **01394764**

Date of Policy: **November 2, 2004 at Fee No. 2004-102796**

Name of Insured:

American Land Management, L.L.C., a South Dakota Limited Liability Company

1. The estate or interest referred to herein is at the Date of Policy vested in:

   American Land Management, L.L.C., a South Dakota Limited Liability Company

2. The estate or interest in the land described herein and which is covered by this policy is:

   A FEE

3. The land referred to in this policy is situated in the County of Mohave, State of ARIZONA, and is more particularly described in Exhibit "A" attached hereto and made a part hereof.

Countersigned:

BY: James Davison
Authorized Officer or Agent

EXHIBIT "A"

Lots 5, 20, 35, 56, 71, 75, 102, 109 and 126, Tract 27-27-20 (Flannery & Allen), according to the plat recorded August 18, 1930, records of Mhoave County, Arizona/

EXCEPT all oil, gas, coal and minerals as reserved in Deeds 37, page 236, records of Mohave County, Arizona.

SCHEDULE B

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage, nor against costs, attorneys fees or expenses, any or all of which arise by reason of the following:

PART I

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices or such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.

3. Easements, liens or encumbrances, or claims thereof, which are not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortages in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, and agreements, covenants, conditions or rights incident thereto, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.

SCHEDULE B
EXCEPTIONS FROM COVERAGE

PART II

THIS POLICY DOES NOT INSURE AGAINST LOSS OR DAMAGE BY REASON OF THE FOLLOWING:

1. OBLIGATIONS imposed upon said land by its inclusion within any district formed pursuant to Title 48, Arizona Revised Statutes, excluding however Municipal or County Improvement Districts.

2. RESERVATIONS, exceptions, covenants, conditions and rights reserved or imposed in Deed from Santa Fe Pacific Railroad Company:

   Recorded in Book 37 of Deeds
   Page 236

3. RIGHT OF WAY for road.
   (Affects Lots 35 and 102)

4. THE LACK of a legal right of access recorded in insurable form to and from said land to a public street.
   Notwithstanding the affirmative assurance of Paragraph 4, the Company is unwilling to insure access.

POLICY OF TITLE INSURANCE
Issued by
Transnation Title Insurance Company
SCHEDULE A

Amount of Insurance: **$180,000.00** Policy/File No.: **01394759**

Date of Policy: **November 1, 2004 at Fee No. 2004-102023**

Name of Insured:

American Land Management, L.L.C., a South Dakota Limited Liability Corporation

1. The estate or interest referred to herein is at the Date of Policy vested in:

   American Land Management, L.L.C., a South Dakota Limited Liability Corporation

2. The estate or interest in the land described herein and which is covered by this policy is:

   A FEE

3. The land referred to in this policy is situated in the County of Mohave, State of ARIZONA, and is more particularly described in Exhibit "A" attached hereto and made a part hereof.

Countersigned:

BY: James Davison
Authorized Officer or Agent

EXHIBIT "A"

Lots 13,30,41,58,70,91,100,101, and 115, Tract 27-27-20 (Flannery & Allen) according to the plat recorded August 18, 1930, records of Mohave County, Arizona.

EXCEPT all oil, gas, coal, and minerals as reserved in Deed recorded in Book 37 of Deeds and Page 236, records of Mohave County, Arizona.

SCHEDULE B

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage, nor against costs, attorneys fees or expenses, any or all of which arise by reason of the following:

PART I

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices or such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.

3. Easements, liens or encumbrances, or claims thereof, which are not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortages in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, and agreements, covenants, conditions or rights incident thereto, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.

SCHEDULE B
EXCEPTIONS FROM COVERAGE

PART II

THIS POLICY DOES NOT INSURE AGAINST LOSS OR DAMAGE BY REASON OF THE FOLLOWING:

1. OBLIGATIONS imposed upon said land by its inclusion within any district formed pursuant to Title 48, Arizona Revised Statutes, excluding however Municipal or County Improvement Districts.

2. RESERVATIONS, exceptions, covenants, conditions and rights reserved or imposed in Deed from Santa Fe Pacific Railroad Company:

   Recorded in Book 37 of Deeds
   Page 236

3. RIGHT OF WAY for Road
   (Affects Lots 30 and 101).

4. RIGHT OF WAY for Water Line
   (Affects Lots 13 and 101).

5. THE LACK of a legal right of access recorded in insurable form to and from said land to a public street.
   Notwithstanding the affirmative assurance of Paragraph 4, the Company is unwilling to insure access.

POLICY OF TITLE INSURANCE
Issued by
Transnation Title Insurance Company
SCHEDULE A

Amount of Insurance: **$180,000.00** Policy/File No.: **01394757**

Date of Policy: **November 1, 2004 at Fee No. 2004-102021**

Name of Insured:

American Land Management, L.L.C., a South Dakota Limited Liability Corporation

1. The estate or interest referred to herein is at the Date of Policy vested in:

   American Land Management, L.L.C., a South Dakota Limited Liability Corporation

2. The estate or interest in the land described herein and which is covered by this policy is:

   A FEE

3. The land referred to in this policy is situated in the County of Mohave, State of ARIZONA, and is more particularly described in Exhibit "A" attached hereto and made a part hereof.

Countersigned:

BY: James Davison
Authorized Officer or Agent

EXHIBIT "A"

Lots 25, 42, 43, 68, 76, 83, 84, 99 and 104, Tract 27-27-20 (Flannery & Allen) according to the plat recorded August 18,1930 records of Mohave County, Arizona.

EXCEPT all oil, gas, coal, and minerals as reserved recorded in Book 37 of Deed, page 236 records of Mohave County, Arizona.

SCHEDULE B

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage, nor against costs, attorneys fees or expenses, any or all of which arise by reason of the following:

PART I

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices or such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.

3. Easements, liens or encumbrances, or claims thereof, which are not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortages in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, and agreements, covenants, conditions or rights incident thereto, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.

SCHEDULE B
EXCEPTIONS FROM COVERAGE

PART II

THIS POLICY DOES NOT INSURE AGAINST LOSS OR DAMAGE BY REASON OF THE FOLLOWING:

1. OBLIGATIONS imposed upon said land by its inclusion within any district formed pursuant to Title 48, Arizona Revised Statutes, excluding however Municipal or County Improvement Districts.

2. RESERVATIONS, exceptions, covenants, conditions and rights reserved or imposed in Deed from Santa Fe Pacific Railroad Company:

   Recorded in Book 37 of Deeds
   Page 236

3. RIGHT OF WAY for road.
   (Affects Lots 68 and 76)

4. RIGHT OF WAY for Water Line.
   (Affects Lot 76)

5. THE LACK of a legal right of access recorded in insurable form to and from said land to a public street.
   Notwithstanding the affirmative assurance of Paragraph 4, the Company is unwilling to insure access.

POLICY OF TITLE INSURANCE
Issued by
Transnation Title Insurance Company
SCHEDULE A

Amount of Insurance: **$180,000.00** Policy/File No.: **01394754**

Date of Policy: **November 1, 2004 at Fee No. 2004-102020**

Name of Insured:

American Land Management, L.L.C., a South Dakota Limited Liability Company

1. The estate or interest referred to herein is at the Date of Policy vested in:

   American Land Management, L.L.C., a South Dakota Limited Liability Company

2. The estate or interest in the land described herein and which is covered by this policy is:

   A FEE

3. The land referred to in this policy is situated in the County of Mohave, State of ARIZONA, and is more particularly described in Exhibit "A" attached hereto and made a part hereof.

Countersigned:

BY: James Davison
Authorized Officer or Agent

EXHIBIT "A"

Lots 10,11,28,36,51,89,98,118 and 125, Tract 27-27-20 (Flannery & Allen) according to the plat recorded August 18, 1930 records of Mohave County, Arizona.

EXCEPT all oil, gas, coal and minerals as reserved in Deed recorded in Book 37 of deeds Page 236, records of Mohave County, Arizona.

SCHEDULE B

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage, nor against costs, attorneys fees or expenses, any or all of which arise by reason of the following:

PART I

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices or such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.

3. Easements, liens or encumbrances, or claims thereof, which are not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortages in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, and agreements, covenants, conditions or rights incident thereto, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.

SCHEDULE B
EXCEPTIONS FROM COVERAGE

PART II

THIS POLICY DOES NOT INSURE AGAINST LOSS OR DAMAGE BY REASON OF THE FOLLOWING:

1. OBLIGATIONS imposed upon said land by its inclusion within any district formed pursuant to Title 48, Arizona Revised Statutes, excluding however Municipal or County Improvement Districts.

2. RESERVATIONS, exceptions, covenants, conditions and rights reserved or imposed in Deed from Santa Fe Pacific Railroad Company:

   Recorded in Book 37 of Deeds
   Page 236

3. RIGHT OF WAY for Road
   (affects Lots 51 and 118).

4. RIGHT OF WAY for Water Line
   (affects Lots 36).

5. THE LACK of a legal right of access recorded in insurable form to and from said land to a public street.
   Notwithstanding the affirmative assurance of Paragraph 4, the Company is unwilling to insure access.

POLICY OF TITLE INSURANCE
Issued by
Transnation Title Insurance Company
SCHEDULE A

Amount of Insurance: **$180,000.00** Policy/File No.: **01394752**

Date of Policy: **November 2, 2004 at Fee No. 2004-102567**

Name of Insured:

American Land Management, L.L.C., a South Dakota Limited Liability Corporation

1. The estate or interest referred to herein is at the Date of Policy vested in:

   American Land Management, L.L.C., a South Dakota Limited Liability Corporation

2. The estate or interest in the land described herein and which is covered by this policy is:

   A FEE

3. The land referred to in this policy is situated in the County of Mohave, State of ARIZONA, and is more particularly described in Exhibit "A" attached hereto and made a part hereof.

Countersigned:

BY: James Davison
Authorized Officer or Agent

EXHIBIT "A"

Lots 6, 12, 29, 29, 46, 72, 87, 95, 107 and 116, Tract 27-27-20 (Flannery & Allen) according to the plat recorded August 18, 1930 records of Mohave County, Arizona.

EXCEPT all oil, gas, coal and minerals as reserved in Bool 37 of Deeds, Page 236, records of Mohave County, Arizona.

SCHEDULE B

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage, nor against costs, attorneys fees or expenses, any or all of which arise by reason of the following:

PART I

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices or such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.

3. Easements, liens or encumbrances, or claims thereof, which are not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortages in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, and agreements, covenants, conditions or rights incident thereto, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.

SCHEDULE B
EXCEPTIONS FROM COVERAGE

PART II

THIS POLICY DOES NOT INSURE AGAINST LOSS OR DAMAGE BY REASON OF THE FOLLOWING:

1. OBLIGATIONS imposed upon said land by its inclusion within any district formed pursuant to Title 48, Arizona Revised Statutes, excluding however Municipal or County Improvement Districts.

2. RESERVATIONS, exceptions, covenants, conditions and rights reserved or imposed in Deed from Santa Fe Pacific Railroad Company:

   Recorded in Book 37 of Deeds
   Page 236

3. RIGHT OF WAY for Road.
   (Affects Lot 46 and 107)

4. RIGHT OF WAY for Water Line.
   (Affects Lot 29)

POLICY OF TITLE INSURANCE
Issued by
Transnation Title Insurance Company
SCHEDULE A

Amount of Insurance: **$260,000.00** Policy/File No.: **01394745**

Date of Policy: **November 5, 2004 at Fee No. 2004-103958**

Name of Insured:

American Land Management, L.L.C., a South Dakota Limited Liability Company

1. The estate or interest referred to herein is at the Date of Policy vested in:

   American Land Management, L.L.C., a South Dakota Limited Liability Company

2. The estate or interest in the land described herein and which is covered by this policy is:

   A FEE

3. The land referred to in this policy is situated in the County of Mohave, State of ARIZONA, and is more particularly described in Exhibit "A" attached hereto and made a part hereof.

Countersigned:

BY: James Lawson
Authorized Officer or Agent

EXHIBIT "A"

Lots 9, 38, 39, 40, 55, 59, 60, 61, 77, 78, 94, 103 and 124, Tract 27-27-20 (Flannery & Allen) according to the plat recorded August 18, 1930 records of Mohave County, Arizona.

EXCEPT all oil, gas, coal and mineral as reserved in Book 37 of Deed, Page 236, records of Mohave County, Arizona.

SCHEDULE B

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage, nor against costs, attorneys fees or expenses, any or all of which arise by reason of the following:

PART I

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices or such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.

3. Easements, liens or encumbrances, or claims thereof, which are not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortages in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, and agreements, covenants, conditions or rights incident thereto, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.

SCHEDULE B
EXCEPTIONS FROM COVERAGE

PART II

THIS POLICY DOES NOT INSURE AGAINST LOSS OR DAMAGE BY REASON OF THE FOLLOWING:

1. TAXES AND ASSESSMENTS collectible by the County Treasurer, a lien payable but not yet due for the following year:

   Second half of 2004

2. OBLIGATIONS imposed upon said land by its inclusion within any district formed pursuant to Title 48, Arizona Revised Statutes, excluding however Municipal or County Improvement Districts.

3. RESERVATIONS, exceptions, covenants, conditions and rights reserved or imposed in Deed from Santa Fe Pacific Railroad Company:

   Recorded in Book 37 of Deeds
   Page 236

4. RIGHT OF WAY for Road.
   (Affects Lots 61 and 77)

5. RIGHT OF WAY for Water Line.
   (Affects Lots 60 and 124

6. THE LACK of a legal right of access recorded in insurable form to and from said land to a public street.
   Notwithstanding the affirmative assurance of Paragraph 4, the Company is unwilling to insure access.

7. DEED OF TRUST given to secure the original amount shown below, and any other amount payable under the terms thereof:

Amount	$250,000.00
Dated	October 15, 2004
Recorded	November 05, 2004
Book	5287 of Official Records
Page	874
Trustor	American Land Management, L.L.C., a South Dakota Limited Liability Company
Trustee	Transnation Title Insurance Company, a Corporation
Beneficiary	Richard L.S. Proctor, a single man

First American

First American Title Insurance Company
4801 East Washington Street, Suite 150
Phoenix, AZ 85034
602-685-7840 / Fax 602-685-7848

American Land Management, L.L.C.
6101 S. Mustang Circle
Sioux Falls, SD 57108

October 22, 2004

Contact:	**Policy Department**
Phone:	**602-685-7840**
Order Number:	**291-4357325**
Property:	**Vacant Land** **, AZ**

Attached please find the following item(s):

Policy of Title Insurance

NOTE: Your Policy is a Computer Generated Product. Although lacking color and "live" signatures, it is the original of your policy. Endorsements, if any, issued with the issuance of the Original Policy need not contain a date or signature.

Thank you for your confidence and support. We at First American Title Insurance Company maintain the fundamental principle:

Customer First!
First American Title

Form No. 1402.92
(10/17/92)
ALTA Owner's Policy

POLICY OF TITLE INSURANCE

ISSUED BY

First American Title Insurance Company

SUBJECT TO THE EXCLUSIONS FROM COVERAGE, THE EXCEPTIONS FROM COVERAGE CONTAINED IN SCHEDULE B AND THE CONDITIONS AND STIPULATIONS, FIRST AMERICAN TITLE INSURANCE COMPANY, a California corporation, herein called the Company, insures, as of Date of Policy shown in Schedule A, against loss or damage, not exceeding the Amount of Insurance stated in Schedule A, sustained or incurred by the insured by reason of:

1. Title to the estate or interest described in Schedule A being vested other than as stated therein;
2. Any defect in or lien or encumbrance on the title;
3. Unmarketability of the title;
4. Lack of a right of access to and from the land.

The Company will also pay the costs, attorneys' fees and expenses incurred in defense of the title, as insured, but only to the extent provided in the Conditions and Stipulations.

First American Title Insurance Company

BY Gary L. Kerwood PRESIDENT

ATTEST Mark R. Arnesen SECRETARY

FIRST AMERICAN TITLE INSURANCE COMPANY INCORPORATED SEPTEMBER 20, 1889 CALIFORNIA

Form No. 1402.92
(10/17/92)
ALTA Owner's Policy

SCHEDULE OF EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims or other matters:
   (a) created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy; or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the estate or interest insured by this policy.
4. Any claim, which arises out of the transaction vesting in the Insured the estate or interest insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
   (i) the transaction creating the estate or interest insured by this policy being deemed a fraudulent conveyance or fraudulent transfer; or
   (ii) the transaction creating the estate or interest insured by this policy being deemed a preferential transfer except where the preferential transfer results from the failure:
      (a) to timely record the instrument of transfer; or
      (b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

First American Title Insurance Company

SCHEDULE A

Type of Coverage: **ALTA Standard Owner's (1992)**

Amount of Insurance **$20,000.00**

Date of Policy: October 19, 2004
To and include Book 5258 of Official Records at Page 116

1. Name of Insured:

   American Land Management, L.L.C., a South Dakota limited liability company

2. The estate or interest in the land which is covered by this Policy is fee.

3. Title to the estate or interest in the land is vested in:

   American Land Management, L.L.C., a South Dakota limited liability company

4. The land referred to in this policy is situated in the State of Arizona, County of Mohave and described as follows:

SEE EXHIBIT " A" ATTACHED HEREIN

EXHIBIT "A"

LOT 4, OF FLANNERY AND ALLEN TRACT 27-27-20 ACCORDING TO THE PLAT THEREOF, RECORDED AUGUST 18, 1930 IN THE OFFICE OF THE COUNTY RECORDER OF MOHAVE COUNTY, ARIZONA.

EXCEPT THEREFROM, ALL COAL, OIL, GAS AND MINERAL DEPOSITS AS RESERVED IN INSTRUMENT RECORDED IN BOOK 37 OF DEEDS, PAGE 236.

SCHEDULE B

This policy does not insure against loss or damage, nor against costs, attorneys' fees or expenses, any or all of which arise by reason of the following:

PART ONE:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or by making inquiry of persons in possession thereof.

3. Easements, liens, or encumbrances, or claims thereof, which are not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water; whether or not the aforementioned matters excepted are shown by the public records.

6. Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the public records.

SCHEDULE B

PART TWO:

1. Any district, improvement district, assessments or bond as disclosed by the records of the office of the Mohave County Assessor or Treasurer.

2. The right to enter upon said land, prospect for, mine and remove all coal, oil, gas and other mineral deposits as reserved in Deed recorded as Book 37 of Deeds, Page 236.

3. The rights of the Santa Fe Pacific Railroad Company, its successors and assigns, to appropriate rights of way and rights incident to the operation of railways, as reserved in Deed recorded as Book 37 of Deeds, Page 236.

4. The lack of a right of access to and from the land.

End of Schedule B - Part II

Form No. 1402.92
(10/17/92)
ALTA Owner's Policy

CONDITIONS AND STIPULATIONS

1. DEFINITION OF TERMS

The following terms when used in this policy mean:

(a) "insured": the insured named in Schedule A, and, subject to any rights or defenses the Company would have had against the named insured, those who succeed to the interest of the named insured by operation of law as distinguished from purchase including, but not limited to, heirs, distributees, devisees, survivors, personal representatives, next of kin, or corporate or fiduciary successors.

(b) "insured claimant": an insured claiming loss or damage.

(c) "knowledge" or "known": actual knowledge, not constructive knowledge or notice which may be imputed to an insured by reason of the public records as defined in this policy or any other records which impart constructive notice of matters affecting the land.

(d) "land": the land described or referred to in Schedule A, and improvements affixed thereto which by law constitute real property. The term "land" does not include any property beyond the lines of the area described or referred to in Schedule A, nor any right, title, interest, estate or easement in abutting streets, roads, avenues, alleys, lanes, ways or waterways, but nothing herein shall modify or limit the extent to which a right of access to and from the land is insured by this policy.

(e) "mortgage": mortgage, deed of trust, trust deed, or other security instrument.

(f) "public records": records established under state statutes at Date of Policy for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without knowledge. With respect to Section 1(a)(iv) of the Exclusions From Coverage, "public records" shall also include environmental protection liens filed in the records of the clerk of the United States district court for the district in which the land is located.

(g) "unmarketability of the title": an alleged or apparent matter affecting the title to the land, not excluded or excepted from coverage, which would entitle a purchaser of the estate or interest described in Schedule A to be released from the obligation to purchase by virtue of a contractual condition requiring the delivery of marketable title.

2. CONTINUATION OF INSURANCE AFTER CONVEYANCE OF TITLE.

The coverage of this policy shall continue in force as of Date of Policy in favor of an insured only so long as the insured retains an estate or interest in the land, or holds an indebtedness secured by a purchase money mortgage given by a purchaser from the insured, or only so long as the insured shall have liability by reason of covenants of warranty made by the insured in any transfer or conveyance of the estate or interest. This policy shall not continue in force in favor of any purchaser from the insured of either (i) an estate or interest in the land, or (ii) an indebtedness secured by a purchase money mortgage given to the insured.

3. NOTICE OF CLAIM TO BE GIVEN BY INSURED CLAIMANT.

The insured shall notify the Company promptly in writing (i) in case of any litigation as set forth in Section 4(a) below, (ii) in case knowledge shall come to an insured hereunder of any claim of title or interest which is adverse to the title to the estate or interest, as insured, and which might cause loss or damage for which the Company may be liable by virtue of this policy, or (iii) if title to the estate or interest, as insured, is rejected as unmarketable. If prompt notice shall not be given to the Company, then as to the insured all liability of the Company shall terminate with regard to the matter or matters for which prompt notice is required; provided, however, that failure to notify the Company shall in no case prejudice the rights of any insured under this policy unless the Company shall be prejudiced by the failure and then only to the extent of the prejudice.

4. DEFENSE AND PROSECUTION OF ACTIONS; DUTY OF INSURED CLAIMANT TO COOPERATE.

(a) Upon written request by the insured and subject to the options contained in Section 6 of these Conditions and Stipulations, the Company, at its own cost and without unreasonable delay, shall provide for the defense of an insured in litigation in which any third party asserts a claim adverse to the title or interest as insured, but only as to those stated causes of action alleging a defect, lien or encumbrance or other matter insured against by this policy. The Company shall have the right to select counsel of its choice (subject to the right of the insured to object for reasonable cause) to represent the insured as to those stated causes of action and shall not be liable for and will not pay the fees of any other counsel. The Company will not pay any fees, costs or expenses incurred by the insured in the defense of those causes of action which allege matters not insured against by this policy.

(b) The Company shall have the right, at its own cost, to institute and prosecute any action or proceeding or to do any other act which in its opinion may be necessary or desirable to establish the title to the estate or interest, as insured, or to prevent or reduce loss or damage to the insured. The Company may take any appropriate action under the terms of this policy, whether or not it shall be liable hereunder, and shall not thereby concede liability or waive any provision of this policy. If the Company shall exercise its rights under this paragraph, it shall do so diligently.

(c) Whenever the Company shall have brought an action or interposed a defense as required or permitted by the provisions of this policy, the Company may pursue any litigation to final determination by a court of competent jurisdiction and expressly reserves the right, in its sole discretion, to appeal from any adverse judgment or order.

(d) In all cases where this policy permits or requires the Company to prosecute or provide for the defense of any action or proceeding, the insured shall secure to the Company the right to so prosecute or provide defense in the action or proceeding, and all appeals therein, and permit the Company to use, at its option, the name of the insured for this purpose.

Whenever requested by the Company, the insured, at the Company's expense, shall give the Company all reasonable aid (i) in any action or proceeding, securing evidence, obtaining witnesses, prosecuting or defending the action or proceeding, or effecting settlement, and (ii) in any other lawful act which in the opinion of the Company may be necessary or desirable to establish the title to the estate or interest as insured. If the Company is prejudiced by the failure of the insured to furnish the required cooperation, the Company's obligations to the insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such cooperation.

5. PROOF OF LOSS OR DAMAGE.

In addition to and after the notices required under Section 3 of these Conditions and Stipulations have been provided the Company, a proof of loss or damage signed and sworn to by the insured claimant shall be furnished to the Company within 90 days after the insured claimant shall ascertain the facts giving rise to the loss or damage. The proof of loss or damage shall describe the defect in, or lien or encumbrance on the title, or other matter insured against by this policy which constitutes the basis of loss or damage and shall state, to the extent possible, the basis of calculating the amount of the loss or damage. If the Company is prejudiced by the failure of the insured claimant to provide the required proof of loss or damage, the Company's obligations to the insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such proof of loss or damage.

In addition, the insured claimant may reasonably be required to submit to examination under oath by any authorized representative of the Company and shall produce for examination, inspection and copying, at such reasonable times and places as may be designated by any authorized representative of the Company, all records, books, ledgers, checks, correspondence and memoranda, whether bearing a date before or after Date of Policy, which reasonably pertain to the loss or damage. Further, if requested by any authorized representative of the Company, the insured claimant shall grant its permission, in writing, for any authorized representative of the Company to examine, inspect and copy all records, books, ledgers, checks, correspondence and memoranda in the custody or control of a third party, which reasonably pertain to the loss or damage. All information designated as confidential by the insured claimant provided to the Company pursuant to this Section shall not be disclosed to others unless, in the reasonable judgment of the Company, it is necessary in the administration of the claim. Failure of the insured claimant to submit for examination under oath, produce other reasonably requested information or grant permission to secure reasonably necessary information from third parties as required in this paragraph shall terminate any liability of the Company under this policy as to that claim.

6. **OPTIONS TO PAY OR OTHERWISE SETTLE CLAIMS; TERMINATION OF LIABILITY.**

In case of a claim under this policy, the Company shall have the following additional options:

(a) To Pay or Tender Payment of the Amount of Insurance.

To pay or tender payment of the amount of insurance under this policy together with any costs, attorneys' fees and expenses incurred by the insured claimant, which were authorized by the Company, up to the time of payment or tender of payment and which the Company is obligated to pay.

Upon the exercise by the Company of this option, all liability and obligations to insured under this policy, other than to make the payment required, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, and the policy shall be surrendered to the Company for cancellation.

(b) To Pay or Otherwise Settle With Parties Other than the Insured or With the Insured Claimant.

(i) to pay or otherwise settle with other parties for or in the name of an insured claimant any claim insured against under this policy, together with any costs, attorneys' fees and expenses incurred by the insured claimant which were authorized by the Company up to the time of payment and which the Company is obligated to pay; or

(ii) to pay or otherwise settle with the insured claimant the loss or damage provided for under this policy, together with any costs, attorneys' fees and expenses incurred by the insured claimant which were authorized by the Company up to the time of payment and which the Company is obligated to pay.

Upon the exercise by the Company of either of the options provided for in paragraphs (b) (i) or (ii), the Company's obligations to the insured under this policy for the claimed loss or damage, other than the payments required to be made, shall terminate, including any liability or obligation to defend, prosecute or continue any litigation.

7. **DETERMINATION, EXTENT OF LIABILITY AND COINSURANCE.**

This policy is a contract of indemnity against actual monetary loss or damage sustained or incurred by the insured claimant who has suffered loss or damage by reason of matters insured against by this policy and only to the extent herein described.

(a) The liability of the Company under this policy shall not exceed the least of:

(i) the Amount of Insurance stated in Schedule A;

or,

(ii) the difference between the value of the insured estate or interest as insured and the value of the insured estate or interest subject to the defect, lien or encumbrance insured against by this policy.

(b) In the event the Amount of Insurance stated in Schedule A at the Date of Policy is less than 80 percent of the value of the insured estate or interest or the full consideration paid for the land, whichever is less, or if subsequent to the Date of Policy an improvement is erected on the land which increases the value of the insured estate or interest by at least 20 percent over the Amount of Insurance stated in Schedule A, then this Policy is subject to the following:

(i) where no subsequent improvement has been made, as to any partial loss, the Company shall only pay the loss pro rata in the proportion that the amount of insurance at Date of Policy bears to the total value of the insured estate or interest at Date of Policy; or (ii) where a subsequent improvement has been made, as to any partial loss, the Company shall only pay the loss pro rata in the proportion that 120 percent of the Amount of Insurance stated in Schedule A bears to the sum of the Amount of Insurance stated in Schedule A and the amount expended for the improvement. The provisions of this paragraph shall not apply to costs, attorneys' fees and expenses for which the Company is liable under this policy, and shall only apply to that portion of any loss which exceeds, in the aggregate, 10 percent of the Amount of Insurance stated in Schedule A.

(c) The Company will pay only those costs, attorneys' fees and expenses incurred in accordance with Section 4 of these Conditions and Stipulations.

8. **APPORTIONMENT.**

If the land described in Schedule (A) (C) consists of two or more parcels which are not used as a single site, and a loss is established affecting one or more of the parcels but not all, the loss shall be computed and settled on a pro rata basis as if the amount of insurance under this policy was divided pro rata as to the value on Date of Policy of each separate parcel to the whole, exclusive of any improvements made subsequent to Date of Policy, unless a liability or value has otherwise been agreed upon as to each parcel by the Company and the insured at the time of the issuance of this policy and shown by an express statement or by an endorsement attached to this policy.

9. **LIMITATION OF LIABILITY.**

(a) If the Company establishes the title, or removes the alleged defect, lien or encumbrance, or cures the lack of a right of access to or from the land, or cures the claim of unmarketability of title, all as insured, in a reasonably diligent manner by any method, including litigation and the completion of any appeals therefrom, it shall have fully performed its obligations with respect to that matter and shall not be liable for any loss or damage caused thereby.

(b) In the event of any litigation, including litigation by the Company or with the Company's consent, the Company shall have no liability for loss or damage until there has been a final determination by a court of competent jurisdiction, and disposition of all appeals therefrom, adverse to the title as insured.

(c) The Company shall not be liable for loss or damage to any insured for liability voluntarily assumed by the insured in settling any claim or suit without the prior written consent of the Company.

10. **REDUCTION OF INSURANCE; REDUCTION OR TERMINATION OF LIABILITY.**

All payments under this policy, except payments made for costs, attorneys' fees and expenses, shall reduce the amount of the insurance pro tanto.

11. **LIABILITY NONCUMULATIVE.**

It is expressly understood that the amount of insurance under this policy shall be reduced by any amount the Company may pay under any policy insuring a mortgage to which exception is taken in Schedule B or to which the insured has agreed, assumed, or taken subject, or which is hereafter executed by an insured and which is a charge or lien on the estate or interest described or referred to in Schedule A, and the amount so paid shall be deemed a payment under this policy to the insured owner.

12. **PAYMENT OF LOSS.**

(a) No payment shall be made without producing this policy for endorsement of the payment unless the policy has been lost or destroyed, in which case proof of loss or destruction shall be furnished to the satisfaction of the Company.

(b) When liability and the extent of loss or damage has been definitely fixed in accordance with these Conditions and Stipulations, the loss or damage shall be payable within 30 days thereafter.

13. **SUBROGATION UPON PAYMENT OR SETTLEMENT.**

(a) **The Company's Right of Subrogation.** Whenever the Company shall have settled and paid a claim under this policy, all right of subrogation shall vest in the Company unaffected by any act of the insured claimant.

The Company shall be subrogated to and be entitled to all rights and remedies which the insured claimant would have had against any person or property in respect to the claim had this policy not been issued. If requested by the Company, the insured claimant shall transfer to the Company all rights and remedies against any person or property necessary in order to perfect this right of subrogation. The insured claimant shall permit the Company to sue, compromise or settle in the name of the insured claimant and to use the name of the insured claimant in any transaction or litigation involving these rights or remedies.

If a payment on account of a claim does not fully cover the loss of the insured claimant, the Company shall be subrogated to these rights and remedies in the proportion which the Company's payment bears to the whole amount of the loss.

If loss should result from any act of the insured claimant, as stated above, that act shall not void this policy, but the Company, in that event, shall be required to pay only that part of any losses insured against by this policy which shall exceed the amount, if any, lost to the Company by reason of the impairment by the insured claimant of the Company's right of subrogation.

(b) The Company's Rights Against Non-Insured Obligors.

The Company's right of subrogation against non-insured obligors shall exist and shall include, without limitation, the rights of the insured to indemnities, guaranties, other policies of insurance or bonds, notwithstanding any terms or conditions contained in those instruments which provide for subrogation rights by reason of this policy.

14. ARBITRATION

Unless prohibited by applicable law, either the Company or the insured may demand arbitration pursuant to the Title Insurance Arbitration Rules of the American Arbitration Association. Arbitrable matters may include, but are not limited to, any controversy or claim between the Company and the insured arising out of or relating to this policy, any service of the Company in connection with its issuance or the breach of a policy provision or other obligation. All arbitrable matters when the Amount of Insurance is $1,000,000 or less shall be arbitrated at the option of either the Company or the insured. All arbitrable matters when the Amount of Insurance is inexcess of $1,000,000 shall be arbitrated only when agreed to by both the Company and the insured. Arbitration pursuant to this policy and under the Rules in effect on the date the demand for arbitration is made or, at the option of the insured, the Rules in effect at Date of Policy shall be binding upon the parties. The award may include attorneys' fees only if the laws of the state in which the land is located permit a court to award attorneys' fees to a prevailing party. Judgment upon the award rendered by the Arbitrator(s) may be entered in any court having jurisdiction thereof.

The law of the situs of the land shall apply to an arbitration under the Title Insurance Arbitration Rules.

A copy of the Rules may be obtained from the Company upon request.

15. *LIABILITY LIMITED TO THIS POLICY;* POLICY ENTIRE CONTRACT.

(a) This policy together with all endorsements, if any, attached hereto by the Company is the entire policy and contract between the insured and the Company. In interpreting any provision of this policy, this policy shall be construed as a whole.

(b) Any claim of loss or damage, whether or not based on negligence, and which arises out of the status of the title to the estate or interest covered hereby or by any action asserting such claim, shall be restricted to this policy.

(c) No amendment of or endorsement to this policy can be made except by a writing endorsed hereon or attached hereto signed by either the President, a Vice President, the Secretary, an Assistant Secretary, or validating officer or authorized signatory of the Company.

16. SEVERABILITY.

In the event any provision of the policy is held invalid or unenforceable under applicable law, the policy shall be deemed not to include that provision and all other provisions shall remain in full force and effect.

17. NOTICES, WHERE SENT

All notices required to be given the Company and any statement in writing required to be furnished the Company shall include the number of this policy and shall be addressed to the Company at 1 First American Way, Santa Ana, California 92707, or to the office which issued this policy.

First American

First American Title Insurance Agency of Mohave, Inc.
2213 Stockton Hill Road, Suite 150
Kingman, AZ 86401
602-685-7840 / Fax 602-685-7848

American Land Management, L.L.C.
6101 S. Mustang Circle
Sioux Falls, SD 57108

October 05, 2004

Contact:	**Policy Department**
Phone:	**602-685-7840**
Order Number:	**291-4356367**
Property:	**Vacant Land** **, AZ**

Attached please find the following item(s):

Policy of Title Insurance

Thank you for your confidence and support. We at First American Title Insurance Agency of Mohave, Inc. maintain the fundamental principle:

Customer First!
First American Title

Form No. 1402.92
(10/17/92)
ALTA Owner's Policy

POLICY OF TITLE INSURANCE

ISSUED BY

First American Title Insurance Company

SUBJECT TO THE EXCLUSIONS FROM COVERAGE, THE EXCEPTIONS FROM COVERAGE CONTAINED IN SCHEDULE B AND THE CONDITIONS AND STIPULATIONS, FIRST AMERICAN TITLE INSURANCE COMPANY, a California corporation, herein called the Company, insures, as of Date of Policy shown in Schedule A, against loss or damage, not exceeding the Amount of Insurance stated in Schedule A, sustained or incurred by the insured by reason of:

1. Title to the estate or interest described in Schedule A being vested other than as stated therein;
2. Any defect in or lien or encumbrance on the title;
3. Unmarketability of the title;
4. Lack of a right of access to and from the land.

The Company will also pay the costs, attorneys' fees and expenses incurred in defense of the title, as insured, but only to the extent provided in the Conditions and Stipulations.

First American Title Insurance Company

BY Gary L. Kerwood PRESIDENT

ATTEST Mark R. Arnesen SECRETARY

FIRST AMERICAN TITLE INSURANCE COMPANY INCORPORATED SEPTEMBER 28, 1963 CALIFORNIA

Form No. 1402.92
(10/17/92)
ALTA Owner's Policy

SCHEDULE OF EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims or other matters:
   (a) created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy; or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the estate or interest insured by this policy.
4. Any claim, which arises out of the transaction vesting in the Insured the estate or interest insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
   (i) the transaction creating the estate or interest insured by this policy being deemed a fraudulent conveyance or fraudulent transfer; or
   (ii) the transaction creating the estate or interest insured by this policy being deemed a preferential transfer except where the preferential transfer results from the failure:
      (a) to timely record the instrument of transfer; or
      (b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

First American Title Insurance Agency of Mohave, Inc.

SCHEDULE A

Type of Coverage: **ALTA Standard Owner's (1992)**

Amount of Insurance **$20,000.00**

Date of Policy: October 04, 2004
To and include Book 5235 of Official Records at Page 566

1. Name of Insured:

   American Land Management, L.L.C., a South Dakota limited liability company

2. The estate or interest in the land which is covered by this Policy is fee.

3. Title to the estate or interest in the land is vested in:

   American Land Management, L.L.C., a South Dakota limited liability company

4. The land referred to in this policy is situated in the State of Arizona, County of Mohave and described as follows:

SEE EXHIBIT " A" ATTACHED HEREIN

EXHIBIT "A"

Lot 74, Tract 27-27-20, (FLANNERY & ALLEN), according to the plat thereof, recorded August 18, 1930, in the office of the County Recorder, of Mohave County, Arizona.

Except all coal, oil, gas and mineral deposits as reserved in instrument recorded in Book 37 of Deeds, Page 236.

SCHEDULE B

This policy does not insure against loss or damage, nor against costs, attorneys' fees or expenses, any or all of which arise by reason of the following:

PART ONE:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or by making inquiry of persons in possession thereof.

3. Easements, liens, or encumbrances, or claims thereof, which are not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water; whether or not the aforementioned matters excepted are shown by the public records.

6. Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the public records.

SCHEDULE B

PART TWO:

1. Any district, improvement district, assessments or bond as disclosed by the records of the office of the Mohave County Assessor or Treasurer.

2. The right to enter upon said land, prospect for, mine and remove all coal, oil, gas and other mineral deposits as reserved in Deed recorded as Book 37 of Deeds, Page 236.

3. The rights of the Santa Fe Pacific Railroad Company, its successors and assigns, to appropriate rights of way and rights incident to the operation of railways, as reserved in Deed recorded as Book 37 of Deeds, Page 236.

4. The lack of a right of access to and from the land.

End of Schedule B - Part II

Form No. 1402.92
(10/17/92)
ALTA Owner's Policy

CONDITIONS AND STIPULATIONS

1. DEFINITION OF TERMS

The following terms when used in this policy mean:

(a) "insured": the insured named in Schedule A, and, subject to any rights or defenses the Company would have had against the named insured, those who succeed to the interest of the named insured by operation of law as distinguished from purchase including, but not limited to, heirs, distributees, devisees, survivors, personal representatives, next of kin, or corporate or fiduciary successors.

(b) "insured claimant": an insured claiming loss or damage.

(c) "knowledge" or "known": actual knowledge, not constructive knowledge or notice which may be imputed to an insured by reason of the public records as defined in this policy or any other records which impart constructive notice of matters affecting the land.

(d) "land": the land described or referred to in Schedule A, and improvements affixed thereto which by law constitute real property. The term "land" does not include any property beyond the lines of the area described or referred to in Schedule A, nor any right, title, interest, estate or easement in abutting streets, roads, avenues, alleys, lanes, ways or waterways, but nothing herein shall modify or limit the extent to which a right of access to and from the land is insured by this policy.

(e) "mortgage": mortgage, deed of trust, trust deed, or other security instrument.

(f) "public records": records established under state statutes at Date of Policy for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without knowledge. With respect to Section 1(a)(iv) of the Exclusions From Coverage, "public records" shall also include environmental protection liens filed in the records of the clerk of the United States district court for the district in which the land is located.

(g) "unmarketability of the title": an alleged or apparent matter affecting the title to the land, not excluded or excepted from coverage, which would entitle a purchaser of the estate or interest described in Schedule A to be released from the obligation to purchase by virtue of a contractual condition requiring the delivery of marketable title.

2. CONTINUATION OF INSURANCE AFTER CONVEYANCE OF TITLE.

The coverage of this policy shall continue in force as of Date of Policy in favor of an insured only so long as the insured retains an estate or interest in the land, or holds an indebtedness secured by a purchase money mortgage given by a purchaser from the insured, or only so long as the insured shall have liability by reason of covenants of warranty made by the insured in any transfer or conveyance of the estate or interest. This policy shall not continue in force in favor of any purchaser from the insured of either (i) an estate or interest in the land, or (ii) an indebtedness secured by a purchase money mortgage given to the insured.

3. NOTICE OF CLAIM TO BE GIVEN BY INSURED CLAIMANT.

The insured shall notify the Company promptly in writing (i) in case of any litigation as set forth in Section 4(a) below, (ii) in case knowledge shall come to an insured hereunder of any claim of title or interest which is adverse to the title to the estate or interest, as insured, and which might cause loss or damage for which the Company may be liable by virtue of this policy, or (iii) if title to the estate or interest, as insured, is rejected as unmarketable. If prompt notice shall not be given to the Company, then as to the insured all liability of the Company shall terminate with regard to the matter or matters for which prompt notice is required; provided, however, that failure to notify the Company shall in no case prejudice the rights of any insured under this policy unless the Company shall be prejudiced by the failure and then only to the extent of the prejudice.

4. DEFENSE AND PROSECUTION OF ACTIONS; DUTY OF INSURED CLAIMANT TO COOPERATE.

(a) Upon written request by the insured and subject to the options contained in Section 6 of these Conditions and Stipulations, the Company, at its own cost and without unreasonable delay, shall provide for the defense of an insured in litigation in which any third party asserts a claim adverse to the title or interest as insured, but only as to those stated causes of action alleging a defect, lien or encumbrance or other matter insured against by this policy. The Company shall have the right to select counsel of its choice (subject to the right of the insured to object for reasonable cause) to represent the insured as to those stated causes of action and shall not be liable for and will not pay the fees of any other counsel. The Company will not pay any fees, costs or expenses incurred by the insured in the defense of those causes of action which allege matters not insured against by this policy.

(b) The Company shall have the right, at its own cost, to institute and prosecute any action or proceeding or to do any other act which in its opinion may be necessary or desirable to establish the title to the estate or interest, as insured, or to prevent or reduce loss or damage to the insured. The Company may take any appropriate action under the terms of this policy, whether or not it shall be liable hereunder, and shall not thereby concede liability or waive any provision of this policy. If the Company shall exercise its rights under this paragraph, it shall do so diligently.

(c) Whenever the Company shall have brought an action or interposed a defense as required or permitted by the provisions of this policy, the Company may pursue any litigation to final determination by a court of competent jurisdiction and expressly reserves the right, in its sole discretion, to appeal from any adverse judgment or order.

(d) In all cases where this policy permits or requires the Company to prosecute or provide for the defense of any action or proceeding, the insured shall secure to the Company the right to so prosecute or provide defense in the action or proceeding, and all appeals therein, and permit the Company to use, at its option, the name of the insured for this purpose. Whenever requested by the Company, the insured, at the Company's expense, shall give the Company all reasonable aid (i) in any action or proceeding, securing evidence, obtaining witnesses, prosecuting or defending the action or proceeding, or effecting settlement, and (ii) in any other lawful act which in the opinion of the Company may be necessary or desirable to establish the title to the estate or interest as insured. If the Company is prejudiced by the failure of the insured to furnish the required cooperation, the Company's obligations to the insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such cooperation.

5. PROOF OF LOSS OR DAMAGE.

In addition to and after the notices required under Section 3 of these Conditions and Stipulations have been provided the Company, a proof of loss or damage signed and sworn to by the insured claimant shall be furnished to the Company within 90 days after the insured claimant shall ascertain the facts giving rise to the loss or damage. The proof of loss or damage shall describe the defect in, or lien or encumbrance on the title, or other matter insured against by this policy which constitutes the basis of loss or damage and shall state, to the extent possible, the basis of calculating the amount of the loss or damage. If the Company is prejudiced by the failure of the insured claimant to provide the required proof of loss or damage, the Company's obligations to the insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such proof of loss or damage.

In addition, the insured claimant may reasonably be required to submit to examination under oath by any authorized representative of the Company and shall produce for examination, inspection and copying, at such reasonable times and places as may be designated by any authorized representative of the Company, all records, books, ledgers, checks, correspondence and memoranda, whether bearing a date before or after Date of Policy, which reasonably pertain to the loss or damage. Further, if requested by any authorized representative of the Company, the insured claimant shall grant its permission, in writing, for any authorized representative of the Company to examine, inspect and copy all records, books, ledgers, checks, correspondence and memoranda in the custody or control of a third party, which reasonably pertain to the loss or damage. All information designated as confidential by the insured claimant provided to the Company pursuant to this Section shall not be disclosed to others unless, in the reasonable judgment of the Company, it is necessary in the administration of the claim. Failure of the insured claimant to submit for examination under oath, produce other reasonably requested information or grant permission to secure reasonably necessary information from third parties as required in this paragraph shall terminate any liability of the Company under this policy as to that claim.

6. **OPTIONS TO PAY OR OTHERWISE SETTLE CLAIMS; TERMINATION OF LIABILITY.**

In case of a claim under this policy, the Company shall have the following additional options:

(a) To Pay or Tender Payment of the Amount of Insurance.

To pay or tender payment of the amount of insurance under this policy together with any costs, attorneys' fees and expenses incurred by the insured claimant, which were authorized by the Company, up to the time of payment or tender of payment and which the Company is obligated to pay.

Upon the exercise by the Company of this option, all liability and obligations to insured under this policy, other than to make the payment required, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, and the policy shall be surrendered to the Company for cancellation.

(b) To Pay or Otherwise Settle With Parties Other than the Insured or With the Insured Claimant.

(i) to pay or otherwise settle with other parties for or in the name of an insured claimant any claim insured against under this policy, together with any costs, attorneys' fees and expenses incurred by the insured claimant which were authorized by the Company up to the time of payment and which the Company is obligated to pay; or

(ii) to pay or otherwise settle with the insured claimant the loss or damage provided for under this policy, together with any costs, attorneys' fees and expenses incurred by the insured claimant which were authorized by the Company up to the time of payment and which the Company is obligated to pay.

Upon the exercise by the Company of either of the options provided for in paragraphs (b) (i) or (ii), the Company's obligations to the insured under this policy for the claimed loss or damage, other than the payments required to be made, shall terminate, including any liability or obligation to defend, prosecute or continue any litigation.

7. **DETERMINATION, EXTENT OF LIABILITY AND COINSURANCE.**

This policy is a contract of indemnity against actual monetary loss or damage sustained or incurred by the insured claimant who has suffered loss or damage by reason of matters insured against by this policy and only to the extent herein described.

(a) The liability of the Company under this policy shall not exceed the least of:

(i) the Amount of Insurance stated in Schedule A;

or,

(ii) the difference between the value of the insured estate or interest as insured and the value of the insured estate or interest subject to the defect, lien or encumbrance insured against by this policy.

(b) In the event the Amount of Insurance stated in Schedule A at the Date of Policy is less than 80 percent of the value of the insured estate or interest or the full consideration paid for the land, whichever is less, or if subsequent to the Date of Policy an improvement is erected on the land which increases the value of the insured estate or interest by at least 20 percent over the Amount of Insurance stated in Schedule A, then this Policy is subject to the following:

(i) where no subsequent improvement has been made, as to any partial loss, the Company shall only pay the loss pro rata in the proportion that the amount of insurance at Date of Policy bears to the total value of the insured estate or interest at Date of Policy; or (ii) where a subsequent improvement has been made, as to any partial loss, the Company shall only pay the loss pro rata in the proportion that 120 percent of the Amount of Insurance stated in Schedule A bears to the sum of the Amount of Insurance stated in Schedule A and the amount expended for the improvement. The provisions of this paragraph shall not apply to costs, attorneys' fees and expenses for which the Company is liable under this policy, and shall only apply to that portion of any loss which exceeds, in the aggregate, 10 percent of the Amount of Insurance stated in Schedule A.

(c) The Company will pay only those costs, attorneys' fees and expenses incurred in accordance with Section 4 of these Conditions and Stipulations.

8. **APPORTIONMENT.**

If the land described in Schedule (A) (C) consists of two or more parcels which are not used as a single site, and a loss is established affecting one or more of the parcels but not all, the loss shall be computed and settled on a pro rata basis as if the amount of insurance under this policy was divided pro rata as to the value on Date of Policy of each separate parcel to the whole, exclusive of any improvements made subsequent to Date of Policy, unless a liability or value has otherwise been agreed upon as to each parcel by the Company and the insured at the time of the issuance of this policy and shown by an express statement or by an endorsement attached to this policy.

9. **LIMITATION OF LIABILITY.**

(a) If the Company establishes the title, or removes the alleged defect, lien or encumbrance, or cures the lack of a right of access to or from the land, or cures the claim of unmarketability of title, all as insured, in a reasonably diligent manner by any method, including litigation and the completion of any appeals therefrom, it shall have fully performed its obligations with respect to that matter and shall not be liable for any loss or damage caused thereby.

(b) In the event of any litigation, including litigation by the Company or with the Company's consent, the Company shall have no liability for loss or damage until there has been a final determination by a court of competent jurisdiction, and disposition of all appeals therefrom, adverse to the title as insured.

(c) The Company shall not be liable for loss or damage to any insured for liability voluntarily assumed by the insured in settling any claim or suit without the prior written consent of the Company.

10. **REDUCTION OF INSURANCE; REDUCTION OR TERMINATION OF LIABILITY.**

All payments under this policy, except payments made for costs, attorneys' fees and expenses, shall reduce the amount of the insurance pro tanto.

11. **LIABILITY NONCUMULATIVE.**

It is expressly understood that the amount of insurance under this policy shall be reduced by any amount the Company may pay under any policy insuring a mortgage to which exception is taken in Schedule B or to which the insured has agreed, assumed, or taken subject, or which is hereafter executed by an insured and which is a charge or lien on the estate or interest described or referred to in Schedule A, and the amount so paid shall be deemed a payment under this policy to the insured owner.

12. **PAYMENT OF LOSS.**

(a) No payment shall be made without producing this policy for endorsement of the payment unless the policy has been lost or destroyed, in which case proof of loss or destruction shall be furnished to the satisfaction of the Company.

(b) When liability and the extent of loss or damage has been definitely fixed in accordance with these Conditions and Stipulations, the loss or damage shall be payable within 30 days thereafter.

13. **SUBROGATION UPON PAYMENT OR SETTLEMENT.**

(a) **The Company's Right of Subrogation.** Whenever the Company shall have settled and paid a claim under this policy, all right of subrogation shall vest in the Company unaffected by any act of the insured claimant.

The Company shall be subrogated to and be entitled to all rights and remedies which the insured claimant would have had against any person or property in respect to the claim had this policy not been issued. If requested by the Company, the insured claimant shall transfer to the Company all rights and remedies against any person or property necessary in order to perfect this right of subrogation. The insured claimant shall permit the Company to sue, compromise or settle in the name of the insured claimant and to use the name of the insured claimant in any transaction or litigation involving these rights or remedies.

If a payment on account of a claim does not fully cover the loss of the insured claimant, the Company shall be subrogated to these rights and remedies in the proportion which the Company's payment bears to the whole amount of the loss.

If loss should result from any act of the insured claimant, as stated above, that act shall not void this policy, but the Company, in that event, shall be required to pay only that part of any losses insured against by this policy which shall exceed the amount, if any, lost to the Company by reason of the impairment by the insured claimant of the Company's right of subrogation.

(b) **The Company's Rights Against Non-Insured Obligors.**

The Company's right of subrogation against non-insured obligors shall exist and shall include, without limitation, the rights of the insured to indemnities, guaranties, other policies of insurance or bonds, notwithstanding any terms or conditions contained in those instruments which provide for subrogation rights by reason of this policy.

14. ARBITRATION

Unless prohibited by applicable law, either the Company or the insured may demand arbitration pursuant to the Title Insurance Arbitration Rules of the American Arbitration Association. Arbitrable matters may include, but are not limited to, any controversy or claim between the Company and the insured arising out of or relating to this policy, any service of the Company in connection with its issuance or the breach of a policy provision or other obligation. All arbitrable matters when the Amount of Insurance is $1,000,000 or less shall be arbitrated at the option of either the Company or the insured. All arbitrable matters when the Amount of Insurance is inexcess of $1,000,000 shall be arbitrated only when agreed to by both the Company and the insured. Arbitration pursuant to this policy and under the Rules in effect on the date the demand for arbitration is made or, at the option of the insured, the Rules in effect at Date of Policy shall be binding upon the parties. The award may include attorneys' fees only if the laws of the state in which the land is located permit a court to award attorneys' fees to a prevailing party. Judgment upon the award rendered by the Arbitrator(s) may be entered in any court having jurisdiction thereof.

The law of the situs of the land shall apply to an arbitration under the Title Insurance Arbitration Rules.

A copy of the Rules may be obtained from the Company upon request.

15. LIABILITY LIMITED TO THIS POLICY; POLICY ENTIRE CONTRACT.

(a) This policy together with all endorsements, if any, attached hereto by the Company is the entire policy and contract between the insured and the Company. In interpreting any provision of this policy, this policy shall be construed as a whole.

(b) Any claim of loss or damage, whether or not based on negligence, and which arises out of the status of the title to the estate or interest covered hereby or by any action asserting such claim, shall be restricted to this policy.

(c) No amendment of or endorsement to this policy can be made except by a writing endorsed hereon or attached hereto signed by either the President, a Vice President, the Secretary, an Assistant Secretary, or validating officer or authorized signatory of the Company.

16. SEVERABILITY.

In the event any provision of the policy is held invalid or unenforceable under applicable law, the policy shall be deemed not to include that provision and all other provisions shall remain in full force and effect.

17. NOTICES, WHERE SENT

All notices required to be given the Company and any statement in writing required to be furnished the Company shall include the number of this policy and shall be addressed to the Company at 1 First American Way, Santa Ana, California 92707, or to the office which issued this policy.

First American

First American Title Insurance Agency of Mohave, Inc.
2213 Stockton Hill Road, Suite 150
Kingman, AZ 86401
602-685-7840 / Fax 602-685-7848

American Land Management L.L.C
6101 South Mustang Circle
Sioux Falls, SD 57108

November 02, 2004

Contact:	**Policy Department**
Phone:	**602-685-7840**
Order Number:	**291-4363363**
Property:	**Lot 47 of FLANNERY & ALLEN, TRACT 31-27-20 , AZ**

Attached please find the following item(s):

Policy of Title Insurance

Thank you for your confidence and support. We at First American Title Insurance Agency of Mohave, Inc. maintain the fundamental principle:

Customer First!
First American Title

Form No. 1402.92
(10/17/92)
ALTA Owner's Policy

POLICY OF TITLE INSURANCE

ISSUED BY

First American Title Insurance Company

SUBJECT TO THE EXCLUSIONS FROM COVERAGE, THE EXCEPTIONS FROM COVERAGE CONTAINED IN SCHEDULE B AND THE CONDITIONS AND STIPULATIONS, FIRST AMERICAN TITLE INSURANCE COMPANY, a California corporation, herein called the Company, insures, as of Date of Policy shown in Schedule A, against loss or damage, not exceeding the Amount of Insurance stated in Schedule A, sustained or incurred by the insured by reason of:

1. Title to the estate or interest described in Schedule A being vested other than as stated therein;
2. Any defect in or lien or encumbrance on the title;
3. Unmarketability of the title;
4. Lack of a right of access to and from the land.

The Company will also pay the costs, attorneys' fees and expenses incurred in defense of the title, as insured, but only to the extent provided in the Conditions and Stipulations.

First American Title Insurance Company

BY Gary L. Kerwood PRESIDENT

ATTEST Mark R. Arnesen SECRETARY

FIRST AMERICAN TITLE INSURANCE COMPANY
INCORPORATED
SEPTEMBER 24, 1889
CALIFORNIA

Form No. 1402.92
(10/17/92)
ALTA Owner's Policy

SCHEDULE OF EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims or other matters:
   (a) created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy; or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the estate or interest insured by this policy.
4. Any claim, which arises out of the transaction vesting in the Insured the estate or interest insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
   (i) the transaction creating the estate or interest insured by this policy being deemed a fraudulent conveyance or fraudulent transfer; or
   (ii) the transaction creating the estate or interest insured by this policy being deemed a preferential transfer except where the preferential transfer results from the failure:
      (a) to timely record the instrument of transfer; or
      (b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

First American Title Insurance Agency of Mohave, Inc.

SCHEDULE A

Type of Coverage: **ALTA Standard Owner's (1992)**

Amount of Insurance **$22,000.00**

Date of Policy: October 29, 2004
To and include Book 5278 at Page 54 of Official Records

1. Name of Insured:

   American Land Management L.L.C., a South Dakota Limited Liability Company

2. The estate or interest in the land which is covered by this Policy is fee.

3. Title to the estate or interest in the land is vested in:

   American Land Management L.L.C., a South Dakota Limited Liability Company

4. The land referred to in this policy is situated in the State of Arizona, County of Mohave and described as follows:

SEE EXHIBIT " A" ATTACHED HEREIN

EXHIBIT "A"

Lot 47 of FLANNERY & ALLEN TRACT 31-27-20, according to the plat thereof, recorded October 18, 1929, in the office of the recorder of Mohave County, Arizona.

SCHEDULE B

This policy does not insure against loss or damage, nor against costs, attorneys' fees or expenses, any or all of which arise by reason of the following:

PART ONE:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or by making inquiry of persons in possession thereof.

3. Easements, liens, or encumbrances, or claims thereof, which are not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water; whether or not the aforementioned matters excepted are shown by the public records.

6. Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the public records.

SCHEDULE B

PART TWO:

1. Any district, improvement district, assessments or bond as disclosed by the records of the office of the Mohave County Assessor or Treasurer.

2. The right to enter upon said land, prospect for, mine and remove all coal, oil, gas and other mineral deposits as reserved in Deed recorded as Book 37 of Deeds, Page 236.

3. The rights of the Santa Fe Pacific Railroad Company, its successors and assigns, to appropriate rights of way and rights incident to the operation of railways, as reserved in Deed recorded as Book 37 of Deeds, Page 236.

End of Schedule B - Part II

Form No. 1402.92
(10/17/92)
ALTA Owner's Policy

CONDITIONS AND STIPULATIONS

1. DEFINITION OF TERMS

The following terms when used in this policy mean:

(a) "insured": the insured named in Schedule A, and, subject to any rights or defenses the Company would have had against the named insured, those who succeed to the interest of the named insured by operation of law as distinguished from purchase including, but not limited to, heirs, distributees, devisees, survivors, personal representatives, next of kin, or corporate or fiduciary successors.

(b) "insured claimant": an insured claiming loss or damage.

(c) "knowledge" or "known": actual knowledge, not constructive knowledge or notice which may be imputed to an insured by reason of the public records as defined in this policy or any other records which impart constructive notice of matters affecting the land.

(d) "land": the land described or referred to in Schedule A, and improvements affixed thereto which by law constitute real property. The term "land" does not include any property beyond the lines of the area described or referred to in Schedule A, nor any right, title, interest, estate or easement in abutting streets, roads, avenues, alleys, lanes, ways or waterways, but nothing herein shall modify or limit the extent to which a right of access to and from the land is insured by this policy.

(e) "mortgage": mortgage, deed of trust, trust deed, or other security instrument.

(f) "public records": records established under state statutes at Date of Policy for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without knowledge. With respect to Section 1(a)(iv) of the Exclusions From Coverage, "public records" shall also include environmental protection liens filed in the records of the clerk of the United States district court for the district in which the land is located.

(g) "unmarketability of the title": an alleged or apparent matter affecting the title to the land, not excluded or excepted from coverage, which would entitle a purchaser of the estate or interest described in Schedule A to be released from the obligation to purchase by virtue of a contractual condition requiring the delivery of marketable title.

2. CONTINUATION OF INSURANCE AFTER CONVEYANCE OF TITLE.

The coverage of this policy shall continue in force as of Date of Policy in favor of an insured only so long as the insured retains an estate or interest in the land, or holds an indebtedness secured by a purchase money mortgage given by a purchaser from the insured, or only so long as the insured shall have liability by reason of covenants of warranty made by the insured in any transfer or conveyance of the estate or interest. This policy shall not continue in force in favor of any purchaser from the insured of either (i) an estate or interest in the land, or (ii) an indebtedness secured by a purchase money mortgage given to the insured.

3. NOTICE OF CLAIM TO BE GIVEN BY INSURED CLAIMANT.

The insured shall notify the Company promptly in writing (i) in case of any litigation as set forth in Section 4(a) below, (ii) in case knowledge shall come to an insured hereunder of any claim of title or interest which is adverse to the title to the estate or interest, as insured, and which might cause loss or damage for which the Company may be liable by virtue of this policy, or (iii) if title to the estate or interest, as insured, is rejected as unmarketable. If prompt notice shall not be given to the Company, then as to the insured all liability of the Company shall terminate with regard to the matter or matters for which prompt notice is required; provided, however, that failure to notify the Company shall in no case prejudice the rights of any insured under this policy unless the Company shall be prejudiced by the failure and then only to the extent of the prejudice.

4. DEFENSE AND PROSECUTION OF ACTIONS; DUTY OF INSURED CLAIMANT TO COOPERATE.

(a) Upon written request by the insured and subject to the options contained in Section 6 of these Conditions and Stipulations, the Company, at its own cost and without unreasonable delay, shall provide for the defense of an insured in litigation in which any third party asserts a claim adverse to the title or interest as insured, but only as to those stated causes of action alleging a defect, lien or encumbrance or other matter insured against by this policy. The Company shall have the right to select counsel of its choice (subject to the right of the insured to object for reasonable cause) to represent the insured as to those stated causes of action and shall not be liable for and will not pay the fees of any other counsel. The Company will not pay any fees, costs or expenses incurred by the insured in the defense of those causes of action which allege matters not insured against by this policy.

(b) The Company shall have the right, at its own cost, to institute and prosecute any action or proceeding or to do any other act which in its opinion may be necessary or desirable to establish the title to the estate or interest, as insured, or to prevent or reduce loss or damage to the insured. The Company may take any appropriate action under the terms of this policy, whether or not it shall be liable hereunder, and shall not thereby concede liability or waive any provision of this policy. If the Company shall exercise its rights under this paragraph, it shall do so diligently.

(c) Whenever the Company shall have brought an action or interposed a defense as required or permitted by the provisions of this policy, the Company may pursue any litigation to final determination by a court of competent jurisdiction and expressly reserves the right, in its sole discretion, to appeal from any adverse judgment or order.

(d) In all cases where this policy permits or requires the Company to prosecute or provide for the defense of any action or proceeding, the insured shall secure to the Company the right to so prosecute or provide defense in the action or proceeding, and all appeals therein, and permit the Company to use, at its option, the name of the insured for this purpose.

Whenever requested by the Company, the insured, at the Company's expense, shall give the Company all reasonable aid (i) in any action or proceeding, securing evidence, obtaining witnesses, prosecuting or defending the action or proceeding, or effecting settlement, and (ii) in any other lawful act which in the opinion of the Company may be necessary or desirable to establish the title to the estate or interest as insured. If the Company is prejudiced by the failure of the insured to furnish the required cooperation, the Company's obligations to the insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such cooperation.

5. PROOF OF LOSS OR DAMAGE.

In addition to and after the notices required under Section 3 of these Conditions and Stipulations have been provided the Company, a proof of loss or damage signed and sworn to by the insured claimant shall be furnished to the Company within 90 days after the insured claimant shall ascertain the facts giving rise to the loss or damage. The proof of loss or damage shall describe the defect in, or lien or encumbrance on the title, or other matter insured against by this policy which constitutes the basis of loss or damage and shall state, to the extent possible, the basis of calculating the amount of the loss or damage. If the Company is prejudiced by the failure of the insured claimant to provide the required proof of loss or damage, the Company's obligations to the insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such proof of loss or damage.

In addition, the insured claimant may reasonably be required to submit to examination under oath by any authorized representative of the Company and shall produce for examination, inspection and copying, at such reasonable times and places as may be designated by any authorized representative of the Company, all records, books, ledgers, checks, correspondence and memoranda, whether bearing a date before or after Date of Policy, which reasonably pertain to the loss or damage. Further, if requested by any authorized representative of the Company, the insured claimant shall grant its permission, in writing, for any authorized representative of the Company to examine, inspect and copy all records, books, ledgers, checks, correspondence and memoranda in the custody or control of a third party, which reasonably pertain to the loss or damage. All information designated as confidential by the insured claimant provided to the Company pursuant to this Section shall not be disclosed to others unless, in the reasonable judgment of the Company, it is necessary in the administration of the claim. Failure of the insured claimant to submit for examination under oath, produce other reasonably requested information or grant permission to secure reasonably necessary information from third parties as required in this paragraph shall terminate any liability of the Company under this policy as to that claim.

6. **OPTIONS TO PAY OR OTHERWISE SETTLE CLAIMS; TERMINATION OF LIABILITY.**

In case of a claim under this policy, the Company shall have the following additional options:

(a) To Pay or Tender Payment of the Amount of Insurance.

To pay or tender payment of the amount of insurance under this policy together with any costs, attorneys' fees and expenses incurred by the insured claimant, which were authorized by the Company, up to the time of payment or tender of payment and which the Company is obligated to pay.

Upon the exercise by the Company of this option, all liability and obligations to insured under this policy, other than to make the payment required, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, and the policy shall be surrendered to the Company for cancellation.

(b) To Pay or Otherwise Settle With Parties Other than the Insured or With the Insured Claimant.

(i) to pay or otherwise settle with other parties for or in the name of an insured claimant any claim insured against under this policy, together with any costs, attorneys' fees and expenses incurred by the insured claimant which were authorized by the Company up to the time of payment and which the Company is obligated to pay; or

(ii) to pay or otherwise settle with the insured claimant the loss or damage provided for under this policy, together with any costs, attorneys' fees and expenses incurred by the insured claimant which were authorized by the Company up to the time of payment and which the Company is obligated to pay.

Upon the exercise by the Company of either of the options provided for in paragraphs (b) (i) or (ii), the Company's obligations to the insured under this policy for the claimed loss or damage, other than the payments required to be made, shall terminate, including any liability or obligation to defend, prosecute or continue any litigation.

7. **DETERMINATION, EXTENT OF LIABILITY AND COINSURANCE.**

This policy is a contract of indemnity against actual monetary loss or damage sustained or incurred by the insured claimant who has suffered loss or damage by reason of matters insured against by this policy and only to the extent herein described.

(a) The liability of the Company under this policy shall not exceed the least of:

(i) the Amount of Insurance stated in Schedule A;

or,

(ii) the difference between the value of the insured estate or interest as insured and the value of the insured estate or interest subject to the defect, lien or encumbrance insured against by this policy.

(b) In the event the Amount of Insurance stated in Schedule A at the Date of Policy is less than 80 percent of the value of the insured estate or interest or the full consideration paid for the land, whichever is less, or if subsequent to the Date of Policy an improvement is erected on the land which increases the value of the insured estate or interest by at least 20 percent over the Amount of Insurance stated in Schedule A, then this Policy is subject to the following:

(i) where no subsequent improvement has been made, as to any partial loss, the Company shall only pay the loss pro rata in the proportion that the amount of insurance at Date of Policy bears to the total value of the insured estate or interest at Date of Policy; or (ii) where a subsequent improvement has been made, as to any partial loss, the Company shall only pay the loss pro rata in the proportion that 120 percent of the Amount of Insurance stated in Schedule A bears to the sum of the Amount of Insurance stated in Schedule A and the amount expended for the improvement. The provisions of this paragraph shall not apply to costs, attorneys' fees and expenses for which the Company is liable under this policy, and shall only apply to that portion of any loss which exceeds, in the aggregate, 10 percent of the Amount of Insurance stated in Schedule A.

(c) The Company will pay only those costs, attorneys' fees and expenses incurred in accordance with Section 4 of these Conditions and Stipulations.

8. **APPORTIONMENT.**

If the land described in Schedule (A) (C) consists of two or more parcels which are not used as a single site, and a loss is established affecting one or more of the parcels but not all, the loss shall be computed and settled on a pro rata basis as if the amount of insurance under this policy was divided pro rata as to the value on Date of Policy of each separate parcel to the whole, exclusive of any improvements made subsequent to Date of Policy, unless a liability or value has otherwise been agreed upon as to each parcel by the Company and the insured at the time of the issuance of this policy and shown by an express statement or by an endorsement attached to this policy.

9. **LIMITATION OF LIABILITY.**

(a) If the Company establishes the title, or removes the alleged defect, lien or encumbrance, or cures the lack of a right of access to or from the land, or cures the claim of unmarketability of title, all as insured, in a reasonably diligent manner by any method, including litigation and the completion of any appeals therefrom, it shall have fully performed its obligations with respect to that matter and shall not be liable for any loss or damage caused thereby.

(b) In the event of any litigation, including litigation by the Company or with the Company's consent, the Company shall have no liability for loss or damage until there has been a final determination by a court of competent jurisdiction, and disposition of all appeals therefrom, adverse to the title as insured.

(c) The Company shall not be liable for loss or damage to any insured for liability voluntarily assumed by the insured in settling any claim or suit without the prior written consent of the Company.

10. **REDUCTION OF INSURANCE; REDUCTION OR TERMINATION OF LIABILITY.**

All payments under this policy, except payments made for costs, attorneys' fees and expenses, shall reduce the amount of the insurance pro tanto.

11. **LIABILITY NONCUMULATIVE.**

It is expressly understood that the amount of insurance under this policy shall be reduced by any amount the Company may pay under any policy insuring a mortgage to which exception is taken in Schedule B or to which the insured has agreed, assumed, or taken subject, or which is hereafter executed by an insured and which is a charge or lien on the estate or interest described or referred to in Schedule A, and the amount so paid shall be deemed a payment under this policy to the insured owner.

12. **PAYMENT OF LOSS.**

(a) No payment shall be made without producing this policy for endorsement of the payment unless the policy has been lost or destroyed, in which case proof of loss or destruction shall be furnished to the satisfaction of the Company.

(b) When liability and the extent of loss or damage has been definitely fixed in accordance with these Conditions and Stipulations, the loss or damage shall be payable within 30 days thereafter.

13. **SUBROGATION UPON PAYMENT OR SETTLEMENT.**

(a) **The Company's Right of Subrogation.** Whenever the Company shall have settled and paid a claim under this policy, all right of subrogation shall vest in the Company unaffected by any act of the insured claimant.

The Company shall be subrogated to and be entitled to all rights and remedies which the insured claimant would have had against any person or property in respect to the claim had this policy not been issued. If requested by the Company, the insured claimant shall transfer to the Company all rights and remedies against any person or property necessary in order to perfect this right of subrogation. The insured claimant shall permit the Company to sue, compromise or settle in the name of the insured claimant and to use the name of the insured claimant in any transaction or litigation involving these rights or remedies.

If a payment on account of a claim does not fully cover the loss of the insured claimant, the Company shall be subrogated to these rights and remedies in the proportion which the Company's payment bears to the whole amount of the loss.

If loss should result from any act of the insured claimant, as stated above, that act shall not void this policy, but the Company, in that event, shall be required to pay only that part of any losses insured against by this policy which shall exceed the amount, if any, lost to the Company by reason of the impairment by the insured claimant of the Company's right of subrogation.

(b) The Company's Rights Against Non-Insured Obligors.

The Company's right of subrogation against non-insured obligors shall exist and shall include, without limitation, the rights of the insured to indemnities, guaranties, other policies of insurance or bonds, notwithstanding any terms or conditions contained in those instruments which provide for subrogation rights by reason of this policy.

14. ARBITRATION

Unless prohibited by applicable law, either the Company or the insured may demand arbitration pursuant to the Title Insurance Arbitration Rules of the American Arbitration Association. Arbitrable matters may include, but are not limited to, any controversy or claim between the Company and the insured arising out of or relating to this policy, any service of the Company in connection with its issuance or the breach of a policy provision or other obligation. All arbitrable matters when the Amount of Insurance is $1,000,000 or less shall be arbitrated at the option of either the Company or the insured. All arbitrable matters when the Amount of Insurance is inexcess of $1,000,000 shall be arbitrated only when agreed to by both the Company and the insured. Arbitration pursuant to this policy and under the Rules in effect on the date the demand for arbitration is made or, at the option of the insured, the Rules in effect at Date of Policy shall be binding upon the parties. The award may include attorneys' fees only if the laws of the state in which the land is located permit a court to award attorneys' fees to a prevailing party. Judgment upon the award rendered by the Arbitrator(s) may be entered in any court having jurisdiction thereof.

The law of the situs of the land shall apply to an arbitration under the Title Insurance Arbitration Rules.

A copy of the Rules may be obtained from the Company upon request.

15. LIABILITY LIMITED TO THIS POLICY; POLICY ENTIRE CONTRACT.

(a) This policy together with all endorsements, if any, attached hereto by the Company is the entire policy and contract between the insured and the Company. In interpreting any provision of this policy, this policy shall be construed as a whole.

(b) Any claim of loss or damage, whether or not based on negligence, and which arises out of the status of the title to the estate or interest covered hereby or by any action asserting such claim, shall be restricted to this policy.

(c) No amendment of or endorsement to this policy can be made except by a writing endorsed hereon or attached hereto signed by either the President, a Vice President, the Secretary, an Assistant Secretary, or validating officer or authorized signatory of the Company.

16. SEVERABILITY.

In the event any provision of the policy is held invalid or unenforceable under applicable law, the policy shall be deemed not to include that provision and all other provisions shall remain in full force and effect.

17. NOTICES, WHERE SENT

All notices required to be given the Company and any statement in writing required to be furnished the Company shall include the number of this policy and shall be addressed to the Company at 1 First American Way, Santa Ana, California 92707, or to the office which issued this policy.

First American

First American Title Insurance Company
4801 East Washington Street, Suite 150
Phoenix, AZ 85034
602-685-7840 / Fax 602-685-7848

American Land Management, L.L.C.
6101 S. Mustang Circle
Sioux Falls, SD 57108

October 22, 2004

Contact:	**Policy Department**
Phone:	**602-685-7840**
Order Number:	**291-4355701**
Property:	**Vacant Land** **, AZ**

Attached please find the following item(s):

Policy of Title Insurance

Thank you for your confidence and support. We at First American Title Insurance Company maintain the fundamental principle:

Customer First!
First American Title

Form No. 1402.92
(10/17/92)
ALTA Owner's Policy

POLICY OF TITLE INSURANCE

ISSUED BY

First American Title Insurance Company

SUBJECT TO THE EXCLUSIONS FROM COVERAGE, THE EXCEPTIONS FROM COVERAGE CONTAINED IN SCHEDULE B AND THE CONDITIONS AND STIPULATIONS, FIRST AMERICAN TITLE INSURANCE COMPANY, a California corporation, herein called the Company, insures, as of Date of Policy shown in Schedule A, against loss or damage, not exceeding the Amount of Insurance stated in Schedule A, sustained or incurred by the insured by reason of:

1. Title to the estate or interest described in Schedule A being vested other than as stated therein;
2. Any defect in or lien or encumbrance on the title;
3. Unmarketability of the title;
4. Lack of a right of access to and from the land.

The Company will also pay the costs, attorneys' fees and expenses incurred in defense of the title, as insured, but only to the extent provided in the Conditions and Stipulations.

First American Title Insurance Company

BY Gary L. Kerwood PRESIDENT

ATTEST Mark R. Arnesen SECRETARY

FIRST AMERICAN TITLE INSURANCE COMPANY
INCORPORATED
SEPTEMBER 24, 1963
CALIFORNIA

Form No. 1402.92
(10/17/92)
ALTA Owner's Policy

SCHEDULE OF EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims or other matters:
   (a) created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy; or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the estate or interest insured by this policy.
4. Any claim, which arises out of the transaction vesting in the Insured the estate or interest insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
   (i) the transaction creating the estate or interest insured by this policy being deemed a fraudulent conveyance or fraudulent transfer; or
   (ii) the transaction creating the estate or interest insured by this policy being deemed a preferential transfer except where the preferential transfer results from the failure:
      (a) to timely record the instrument of transfer; or
      (b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

First American Title Insurance Company

SCHEDULE A

Type of Coverage: **ALTA Standard Owner's (1992)**

Amount of Insurance **$20,000.00**

Date of Policy: October 21, 2004
To and include Book 526 of Official Records at Page 290

1. Name of Insured:

   American Land Management, L.L.C., a South Dakota limited liability company

2. The estate or interest in the land which is covered by this Policy is fee.

3. Title to the estate or interest in the land is vested in:

   American Land Management, L.L.C., a South Dakota limited liability company

4. The land referred to in this policy is situated in the State of Arizona, County of Mohave and described as follows:

SEE EXHIBIT " A" ATTACHED HEREIN

EXHIBIT "A"

LOT 39, OF FLANNERY AND ALLEN TRACT 31-27-20, ACCORDING TO THE PLAT THEREOF, RECORDED MARCH 14, 1930, IN THE OFFICE OF THE COUNTY RECORDER OF MOHAVE COUNTY, ARIZONA;

EXCEPT THEREFROM ALL COAL, OIL, GAS AND MINERAL DEPOSITS AS RESERVED IN INSTRUMENT RECORDED AS BOOK 37 OF DEEDS, PAGE 236.

SCHEDULE B

This policy does not insure against loss or damage, nor against costs, attorneys' fees or expenses, any or all of which arise by reason of the following:

PART ONE:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or by making inquiry of persons in possession thereof.

3. Easements, liens, or encumbrances, or claims thereof, which are not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water; whether or not the aforementioned matters excepted are shown by the public records.

6. Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the public records.

SCHEDULE B

PART TWO:

1. Any district, improvement district, assessments or bond as disclosed by the records of the office of the Mohave County Assessor or Treasurer.

2. The right to enter upon said land, prospect for, mine and remove all coal, oil, gas and other mineral deposits as reserved in Deed recorded as Book 37 of Deeds, Page 236.

3. The rights of the Santa Fe Pacific Railroad Company, its successors and assigns, to appropriate rights of way and rights incident to the operation of railways, as reserved in Deed recorded as Book 37 of Deeds, Page 236.

End of Schedule B - Part II

Form No. 1402.92
(10/17/92)
ALTA Owner's Policy

CONDITIONS AND STIPULATIONS

1. DEFINITION OF TERMS

The following terms when used in this policy mean:

(a) "insured": the insured named in Schedule A, and, subject to any rights or defenses the Company would have had against the named insured, those who succeed to the interest of the named insured by operation of law as distinguished from purchase including, but not limited to, heirs, distributees, devisees, survivors, personal representatives, next of kin, or corporate or fiduciary successors.

(b) "insured claimant": an insured claiming loss or damage.

(c) "knowledge" or "known": actual knowledge, not constructive knowledge or notice which may be imputed to an insured by reason of the public records as defined in this policy or any other records which impart constructive notice of matters affecting the land.

(d) "land": the land described or referred to in Schedule A, and improvements affixed thereto which by law constitute real property. The term "land" does not include any property beyond the lines of the area described or referred to in Schedule A, nor any right, title, interest, estate or easement in abutting streets, roads, avenues, alleys, lanes, ways or waterways, but nothing herein shall modify or limit the extent to which a right of access to and from the land is insured by this policy.

(e) "mortgage": mortgage, deed of trust, trust deed, or other security instrument.

(f) "public records": records established under state statutes at Date of Policy for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without knowledge. With respect to Section 1(a)(iv) of the Exclusions From Coverage, "public records" shall also include environmental protection liens filed in the records of the clerk of the United States district court for the district in which the land is located.

(g) "unmarketability of the title": an alleged or apparent matter affecting the title to the land, not excluded or excepted from coverage, which would entitle a purchaser of the estate or interest described in Schedule A to be released from the obligation to purchase by virtue of a contractual condition requiring the delivery of marketable title.

2. CONTINUATION OF INSURANCE AFTER CONVEYANCE OF TITLE.

The coverage of this policy shall continue in force as of Date of Policy in favor of an insured only so long as the insured retains an estate or interest in the land, or holds an indebtedness secured by a purchase money mortgage given by a purchaser from the insured, or only so long as the insured shall have liability by reason of covenants of warranty made by the insured in any transfer or conveyance of the estate or interest. This policy shall not continue in force in favor of any purchaser from the insured of either (i) an estate or interest in the land, or (ii) an indebtedness secured by a purchase money mortgage given to the insured.

3. NOTICE OF CLAIM TO BE GIVEN BY INSURED CLAIMANT.

The insured shall notify the Company promptly in writing (i) in case of any litigation as set forth in Section 4(a) below, (ii) in case knowledge shall come to an insured hereunder of any claim of title or interest which is adverse to the title to the estate or interest, as insured, and which might cause loss or damage for which the Company may be liable by virtue of this policy, or (iii) if title to the estate or interest, as insured, is rejected as unmarketable. If prompt notice shall not be given to the Company, then as to the insured all liability of the Company shall terminate with regard to the matter or matters for which prompt notice is required; provided, however, that failure to notify the Company shall in no case prejudice the rights of any insured under this policy unless the Company shall be prejudiced by the failure and then only to the extent of the prejudice.

4. DEFENSE AND PROSECUTION OF ACTIONS; DUTY OF INSURED CLAIMANT TO COOPERATE.

(a) Upon written request by the insured and subject to the options contained in Section 6 of these Conditions and Stipulations, the Company, at its own cost and without unreasonable delay, shall provide for the defense of an insured in litigation in which any third party asserts a claim adverse to the title or interest as insured, but only as to those stated causes of action alleging a defect, lien or encumbrance or other matter insured against by this policy. The Company shall have the right to select counsel of its choice (subject to the right of the insured to object for reasonable cause) to represent the insured as to those stated causes of action and shall not be liable for and will not pay the fees of any other counsel. The Company will not pay any fees, costs or expenses incurred by the insured in the defense of those causes of action which allege matters not insured against by this policy.

(b) The Company shall have the right, at its own cost, to institute and prosecute any action or proceeding or to do any other act which in its opinion may be necessary or desirable to establish the title to the estate or interest, as insured, or to prevent or reduce loss or damage to the insured. The Company may take any appropriate action under the terms of this policy, whether or not it shall be liable hereunder, and shall not thereby concede liability or waive any provision of this policy. If the Company shall exercise its rights under this paragraph, it shall do so diligently.

(c) Whenever the Company shall have brought an action or interposed a defense as required or permitted by the provisions of this policy, the Company may pursue any litigation to final determination by a court of competent jurisdiction and expressly reserves the right, in its sole discretion, to appeal from any adverse judgment or order.

(d) In all cases where this policy permits or requires the Company to prosecute or provide for the defense of any action or proceeding, the insured shall secure to the Company the right to so prosecute or provide defense in the action or proceeding, and all appeals therein, and permit the Company to use, at its option, the name of the insured for this purpose.

Whenever requested by the Company, the insured, at the Company's expense, shall give the Company all reasonable aid (i) in any action or proceeding, securing evidence, obtaining witnesses, prosecuting or defending the action or proceeding, or effecting settlement, and (ii) in any other lawful act which in the opinion of the Company may be necessary or desirable to establish the title to the estate or interest as insured. If the Company is prejudiced by the failure of the insured to furnish the required cooperation, the Company's obligations to the insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such cooperation.

5. PROOF OF LOSS OR DAMAGE.

In addition to and after the notices required under Section 3 of these Conditions and Stipulations have been provided the Company, a proof of loss or damage signed and sworn to by the insured claimant shall be furnished to the Company within 90 days after the insured claimant shall ascertain the facts giving rise to the loss or damage. The proof of loss or damage shall describe the defect in, or lien or encumbrance on the title, or other matter insured against by this policy which constitutes the basis of loss or damage and shall state, to the extent possible, the basis of calculating the amount of the loss or damage. If the Company is prejudiced by the failure of the insured claimant to provide the required proof of loss or damage, the Company's obligations to the insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such proof of loss or damage.

In addition, the insured claimant may reasonably be required to submit to examination under oath by any authorized representative of the Company and shall produce for examination, inspection and copying, at such reasonable times and places as may be designated by any authorized representative of the Company, all records, books, ledgers, checks, correspondence and memoranda, whether bearing a date before or after Date of Policy, which reasonably pertain to the loss or damage. Further, if requested by any authorized representative of the Company, the insured claimant shall grant its permission, in writing, for any authorized representative of the Company to examine, inspect and copy all records, books, ledgers, checks, correspondence and memoranda in the custody or control of a third party, which reasonably pertain to the loss or damage. All information designated as confidential by the insured claimant provided to the Company pursuant to this Section shall not be disclosed to others unless, in the reasonable judgment of the Company, it is necessary in the administration of the claim. Failure of the insured claimant to submit for examination under oath, produce other reasonably requested information or grant permission to secure reasonably necessary information from third parties as required in this paragraph shall terminate any liability of the Company under this policy as to that claim.

6. **OPTIONS TO PAY OR OTHERWISE SETTLE CLAIMS; TERMINATION OF LIABILITY.**

In case of a claim under this policy, the Company shall have the following additional options:

(a) To Pay or Tender Payment of the Amount of Insurance.

To pay or tender payment of the amount of insurance under this policy together with any costs, attorneys' fees and expenses incurred by the insured claimant, which were authorized by the Company, up to the time of payment or tender of payment and which the Company is obligated to pay.

Upon the exercise by the Company of this option, all liability and obligations to insured under this policy, other than to make the payment required, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, and the policy shall be surrendered to the Company for cancellation.

(b) To Pay or Otherwise Settle With Parties Other than the Insured or With the Insured Claimant.

(i) to pay or otherwise settle with other parties for or in the name of an insured claimant any claim insured against under this policy, together with any costs, attorneys' fees and expenses incurred by the insured claimant which were authorized by the Company up to the time of payment and which the Company is obligated to pay; or

(ii) to pay or otherwise settle with the insured claimant the loss or damage provided for under this policy, together with any costs, attorneys' fees and expenses incurred by the insured claimant which were authorized by the Company up to the time of payment and which the Company is obligated to pay.

Upon the exercise by the Company of either of the options provided for in paragraphs (b) (i) or (ii), the Company's obligations to the insured under this policy for the claimed loss or damage, other than the payments required to be made, shall terminate, including any liability or obligation to defend, prosecute or continue any litigation.

7. **DETERMINATION, EXTENT OF LIABILITY AND COINSURANCE.**

This policy is a contract of indemnity against actual monetary loss or damage sustained or incurred by the insured claimant who has suffered loss or damage by reason of matters insured against by this policy and only to the extent herein described.

(a) The liability of the Company under this policy shall not exceed the least of:

(i) the Amount of Insurance stated in Schedule A;

or,

(ii) the difference between the value of the insured estate or interest as insured and the value of the insured estate or interest subject to the defect, lien or encumbrance insured against by this policy.

(b) In the event the Amount of Insurance stated in Schedule A at the Date of Policy is less than 80 percent of the value of the insured estate or interest or the full consideration paid for the land, whichever is less, or if subsequent to the Date of Policy an improvement is erected on the land which increases the value of the insured estate or interest by at least 20 percent over the Amount of Insurance stated in Schedule A, then this Policy is subject to the following:

(i) where no subsequent improvement has been made, as to any partial loss, the Company shall only pay the loss pro rata in the proportion that the amount of insurance at Date of Policy bears to the total value of the insured estate or interest at Date of Policy; or (ii) where a subsequent improvement has been made, as to any partial loss, the Company shall only pay the loss pro rata in the proportion that 120 percent of the Amount of Insurance stated in Schedule A bears to the sum of the Amount of Insurance stated in Schedule A and the amount expended for the improvement. The provisions of this paragraph shall not apply to costs, attorneys' fees and expenses for which the Company is liable under this policy, and shall only apply to that portion of any loss which exceeds, in the aggregate, 10 percent of the Amount of Insurance stated in Schedule A.

(c) The Company will pay only those costs, attorneys' fees and expenses incurred in accordance with Section 4 of these Conditions and Stipulations.

8. **APPORTIONMENT.**

If the land described in Schedule (A) (C) consists of two or more parcels which are not used as a single site, and a loss is established affecting one or more of the parcels but not all, the loss shall be computed and settled on a pro rata basis as if the amount of insurance under this policy was divided pro rata as to the value on Date of Policy of each separate parcel to the whole, exclusive of any improvements made subsequent to Date of Policy, unless a liability or value has otherwise been agreed upon as to each parcel by the Company and the insured at the time of the issuance of this policy and shown by an express statement or by an endorsement attached to this policy.

9. **LIMITATION OF LIABILITY.**

(a) If the Company establishes the title, or removes the alleged defect, lien or encumbrance, or cures the lack of a right of access to or from the land, or cures the claim of unmarketability of title, all as insured, in a reasonably diligent manner by any method, including litigation and the completion of any appeals therefrom, it shall have fully performed its obligations with respect to that matter and shall not be liable for any loss or damage caused thereby.

(b) In the event of any litigation, including litigation by the Company or with the Company's consent, the Company shall have no liability for loss or damage until there has been a final determination by a court of competent jurisdiction, and disposition of all appeals therefrom, adverse to the title as insured.

(c) The Company shall not be liable for loss or damage to any insured for liability voluntarily assumed by the insured in settling any claim or suit without the prior written consent of the Company.

10. **REDUCTION OF INSURANCE; REDUCTION OR TERMINATION OF LIABILITY.**

All payments under this policy, except payments made for costs, attorneys' fees and expenses, shall reduce the amount of the insurance pro tanto.

11. **LIABILITY NONCUMULATIVE.**

It is expressly understood that the amount of insurance under this policy shall be reduced by any amount the Company may pay under any policy insuring a mortgage to which exception is taken in Schedule B or to which the insured has agreed, assumed, or taken subject, or which is hereafter executed by an insured and which is a charge or lien on the estate or interest described or referred to in Schedule A, and the amount so paid shall be deemed a payment under this policy to the insured owner.

12. **PAYMENT OF LOSS.**

(a) No payment shall be made without producing this policy for endorsement of the payment unless the policy has been lost or destroyed, in which case proof of loss or destruction shall be furnished to the satisfaction of the Company.

(b) When liability and the extent of loss or damage has been definitely fixed in accordance with these Conditions and Stipulations, the loss or damage shall be payable within 30 days thereafter.

13. **SUBROGATION UPON PAYMENT OR SETTLEMENT.**

(a) **The Company's Right of Subrogation.** Whenever the Company shall have settled and paid a claim under this policy, all right of subrogation shall vest in the Company unaffected by any act of the insured claimant.

The Company shall be subrogated to and be entitled to all rights and remedies which the insured claimant would have had against any person or property in respect to the claim had this policy not been issued. If requested by the Company, the insured claimant shall transfer to the Company all rights and remedies against any person or property necessary in order to perfect this right of subrogation. The insured claimant shall permit the Company to sue, compromise or settle in the name of the insured claimant and to use the name of the insured claimant in any transaction or litigation involving these rights or remedies.

If a payment on account of a claim does not fully cover the loss of the insured claimant, the Company shall be subrogated to these rights and remedies in the proportion which the Company's payment bears to the whole amount of the loss.

If loss should result from any act of the insured claimant, as stated above, that act shall not void this policy, but the Company, in that event, shall be required to pay only that part of any losses insured against by this policy which shall exceed the amount, if any, lost to the Company by reason of the impairment by the insured claimant of the Company's right of subrogation.

(b) **The Company's Rights Against Non-Insured Obligors.**

The Company's right of subrogation against non-insured obligors shall exist and shall include, without limitation, the rights of the insured to indemnities, guaranties, other policies of insurance or bonds, notwithstanding any terms or conditions contained in those instruments which provide for subrogation rights by reason of this policy.

14. ARBITRATION

Unless prohibited by applicable law, either the Company or the insured may demand arbitration pursuant to the Title Insurance Arbitration Rules of the American Arbitration Association. Arbitrable matters may include, but are not limited to, any controversy or claim between the Company and the insured arising out of or relating to this policy, any service of the Company in connection with its issuance or the breach of a policy provision or other obligation. All arbitrable matters when the Amount of Insurance is $1,000,000 or less shall be arbitrated at the option of either the Company or the insured. All arbitrable matters when the Amount of Insurance is inexcess of $1,000,000 shall be arbitrated only when agreed to by both the Company and the insured. Arbitration pursuant to this policy and under the Rules in effect on the date the demand for arbitration is made or, at the option of the insured, the Rules in effect at Date of Policy shall be binding upon the parties. The award may include attorneys' fees only if the laws of the state in which the land is located permit a court to award attorneys' fees to a prevailing party. Judgment upon the award rendered by the Arbitrator(s) may be entered in any court having jurisdiction thereof.

The law of the situs of the land shall apply to an arbitration under the Title Insurance Arbitration Rules.

A copy of the Rules may be obtained from the Company upon request.

15. LIABILITY LIMITED TO THIS POLICY; POLICY ENTIRE CONTRACT.

(a) This policy together with all endorsements, if any, attached hereto by the Company is the entire policy and contract between the insured and the Company. In interpreting any provision of this policy, this policy shall be construed as a whole.

(b) Any claim of loss or damage, whether or not based on negligence, and which arises out of the status of the title to the estate or interest covered hereby or by any action asserting such claim, shall be restricted to this policy.

(c) No amendment of or endorsement to this policy can be made except by a writing endorsed hereon or attached hereto signed by either the President, a Vice President, the Secretary, an Assistant Secretary, or validating officer or authorized signatory of the Company.

16. SEVERABILITY.

In the event any provision of the policy is held invalid or unenforceable under applicable law, the policy shall be deemed not to include that provision and all other provisions shall remain in full force and effect.

17. NOTICES, WHERE SENT

All notices required to be given the Company and any statement in writing required to be furnished the Company shall include the number of this policy and shall be addressed to the Company at 1 First American Way, Santa Ana, California 92707, or to the office which issued this policy.

First American

First American Title Insurance Company
4801 East Washington Street, Suite 150
Phoenix, AZ 85034
602-685-7840 / Fax 602-685-7848

American Land Management, L.L.C.
6101 S. Mustang Circle
Sioux Falls, SD 57108

October 05, 2004

Contact:	**Policy Department**
Phone:	**602-685-7840**
Order Number:	**291-4357329**
Property:	**Vacant Land** **, AZ**

Attached please find the following item(s):

Policy of Title Insurance

NOTE: Your Policy is a Computer Generated Product. Although lacking color and "live" signatures, it is the original of your policy. Endorsements, if any, issued with the issuance of the Original Policy need not contain a date or signature.

Thank you for your confidence and support. We at First American Title Insurance Company maintain the fundamental principle:

Customer First!
First American Title

Form No. 1402.92
(10/17/92)
ALTA Owner's Policy

POLICY OF TITLE INSURANCE

ISSUED BY

First American Title Insurance Company

SUBJECT TO THE EXCLUSIONS FROM COVERAGE, THE EXCEPTIONS FROM COVERAGE CONTAINED IN SCHEDULE B AND THE CONDITIONS AND STIPULATIONS, FIRST AMERICAN TITLE INSURANCE COMPANY, a California corporation, herein called the Company, insures, as of Date of Policy shown in Schedule A, against loss or damage, not exceeding the Amount of Insurance stated in Schedule A, sustained or incurred by the insured by reason of:

1. Title to the estate or interest described in Schedule A being vested other than as stated therein;
2. Any defect in or lien or encumbrance on the title;
3. Unmarketability of the title;
4. Lack of a right of access to and from the land.

The Company will also pay the costs, attorneys' fees and expenses incurred in defense of the title, as insured, but only to the extent provided in the Conditions and Stipulations.

First American Title Insurance Company

BY Gary L. Kerwood PRESIDENT

ATTEST Mark R. Arnson SECRETARY

FIRST AMERICAN TITLE INSURANCE COMPANY INCORPORATED SEPTEMBER 24, 1963 CALIFORNIA

Form No. 1402.92
(10/17/92)
ALTA Owner's Policy

SCHEDULE OF EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims or other matters:
   (a) created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy; or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the estate or interest insured by this policy.
4. Any claim, which arises out of the transaction vesting in the Insured the estate or interest insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
   (i) the transaction creating the estate or interest insured by this policy being deemed a fraudulent conveyance or fraudulent transfer; or
   (ii) the transaction creating the estate or interest insured by this policy being deemed a preferential transfer except where the preferential transfer results from the failure:
      (a) to timely record the instrument of transfer; or
      (b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

First American Title Insurance Company

SCHEDULE A

Type of Coverage: **ALTA Standard Owner's (1992)**

Amount of Insurance **$20,000.00**

Date of Policy: October 04, 2004
To and include Book 5235 of Official Records at Page 580

1. Name of Insured:

   American Land Management, L.L.C., a South Dakota limited liability company

2. The estate or interest in the land which is covered by this Policy is fee.

3. Title to the estate or interest in the land is vested in:

   American Land Management, L.L.C., a South Dakota limited liability company

4. The land referred to in this policy is situated in the State of Arizona, County of Mohave and described as follows:

SEE EXHIBIT " A" ATTACHED HEREIN

EXHIBIT "A"

LOT 16, OF TRACT 27-27-20 (FLANNERY & ALLEN) ACCORDING TO THE PLAT THEREOF, RECORDED AUGUST 18, 1930 IN THE OFFICE OF THE COUNTY RECORDER OF MOHAVE COUNTY, ARIZONA.

EXCEPT ALL OIL, GAS, COAL AND MINERALS AS RESERVED IN DEED RECORDED IN BOOK 37 OF DEEDS, PAGE 236, RECORDS OF MOHAVE COUNTY, ARIZONA.

SCHEDULE B

This policy does not insure against loss or damage, nor against costs, attorneys' fees or expenses, any or all of which arise by reason of the following:

PART ONE:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or by making inquiry of persons in possession thereof.

3. Easements, liens, or encumbrances, or claims thereof, which are not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water; whether or not the aforementioned matters excepted are shown by the public records.

6. Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the public records.

SCHEDULE B

PART TWO:

1. Any district, improvement district, assessments or bond as disclosed by the records of the office of the Mohave County Assessor or Treasurer.

2. The right to enter upon said land, prospect for, mine and remove all coal, oil, gas and other mineral deposits as reserved in Deed recorded as Book 37 of Deeds, Page 236.

3. The rights of the Santa Fe Pacific Railroad Company, its successors and assigns, to appropriate rights of way and rights incident to the operation of railways, as reserved in Deed recorded as Book 37 of Deeds, Page 236.

4. All matters as set forth in Results of Survey, recorded as Book 2208 of Surveys, Page 76.

5. The lack of a right of access to and from the land.

End of Schedule B - Part II

Form No. 1402.92
(10/17/92)
ALTA Owner's Policy

CONDITIONS AND STIPULATIONS

1. DEFINITION OF TERMS

The following terms when used in this policy mean:

(a) "insured": the insured named in Schedule A, and, subject to any rights or defenses the Company would have had against the named insured, those who succeed to the interest of the named insured by operation of law as distinguished from purchase including, but not limited to, heirs, distributees, devisees, survivors, personal representatives, next of kin, or corporate or fiduciary successors.

(b) "insured claimant": an insured claiming loss or damage.

(c) "knowledge" or "known": actual knowledge, not constructive knowledge or notice which may be imputed to an insured by reason of the public records as defined in this policy or any other records which impart constructive notice of matters affecting the land.

(d) "land": the land described or referred to in Schedule A, and improvements affixed thereto which by law constitute real property. The term "land" does not include any property beyond the lines of the area described or referred to in Schedule A, nor any right, title, interest, estate or easement in abutting streets, roads, avenues, alleys, lanes, ways or waterways, but nothing herein shall modify or limit the extent to which a right of access to and from the land is insured by this policy.

(e) "mortgage": mortgage, deed of trust, trust deed, or other security instrument.

(f) "public records": records established under state statutes at Date of Policy for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without knowledge. With respect to Section 1(a)(iv) of the Exclusions From Coverage, "public records" shall also include environmental protection liens filed in the records of the clerk of the United States district court for the district in which the land is located.

(g) "unmarketability of the title": an alleged or apparent matter affecting the title to the land, not excluded or excepted from coverage, which would entitle a purchaser of the estate or interest described in Schedule A to be released from the obligation to purchase by virtue of a contractual condition requiring the delivery of marketable title.

2. CONTINUATION OF INSURANCE AFTER CONVEYANCE OF TITLE.

The coverage of this policy shall continue in force as of Date of Policy in favor of an insured only so long as the insured retains an estate or interest in the land, or holds an indebtedness secured by a purchase money mortgage given by a purchaser from the insured, or only so long as the insured shall have liability by reason of covenants of warranty made by the insured in any transfer or conveyance of the estate or interest. This policy shall not continue in force in favor of any purchaser from the insured of either (i) an estate or interest in the land, or (ii) an indebtedness secured by a purchase money mortgage given to the insured.

3. NOTICE OF CLAIM TO BE GIVEN BY INSURED CLAIMANT.

The insured shall notify the Company promptly in writing (i) in case of any litigation as set forth in Section 4(a) below, (ii) in case knowledge shall come to an insured hereunder of any claim of title or interest which is adverse to the title to the estate or interest, as insured, and which might cause loss or damage for which the Company may be liable by virtue of this policy, or (iii) if title to the estate or interest, as insured, is rejected as unmarketable. If prompt notice shall not be given to the Company, then as to the insured all liability of the Company shall terminate with regard to the matter or matters for which prompt notice is required; provided, however, that failure to notify the Company shall in no case prejudice the rights of any insured under this policy unless the Company shall be prejudiced by the failure and then only to the extent of the prejudice.

4. DEFENSE AND PROSECUTION OF ACTIONS; DUTY OF INSURED CLAIMANT TO COOPERATE.

(a) Upon written request by the insured and subject to the options contained in Section 6 of these Conditions and Stipulations, the Company, at its own cost and without unreasonable delay, shall provide for the defense of an insured in litigation in which any third party asserts a claim adverse to the title or interest as insured, but only as to those stated causes of action alleging a defect, lien or encumbrance or other matter insured against by this policy. The Company shall have the right to select counsel of its choice (subject to the right of the insured to object for reasonable cause) to represent the insured as to those stated causes of action and shall not be liable for and will not pay the fees of any other counsel. The Company will not pay any fees, costs or expenses incurred by the insured in the defense of those causes of action which allege matters not insured against by this policy.

(b) The Company shall have the right, at its own cost, to institute and prosecute any action or proceeding or to do any other act which in its opinion may be necessary or desirable to establish the title to the estate or interest, as insured, or to prevent or reduce loss or damage to the insured. The Company may take any appropriate action under the terms of this policy, whether or not it shall be liable hereunder, and shall not thereby concede liability or waive any provision of this policy. If the Company shall exercise its rights under this paragraph, it shall do so diligently.

(c) Whenever the Company shall have brought an action or interposed a defense as required or permitted by the provisions of this policy, the Company may pursue any litigation to final determination by a court of competent jurisdiction and expressly reserves the right, in its sole discretion, to appeal from any adverse judgment or order.

(d) In all cases where this policy permits or requires the Company to prosecute or provide for the defense of any action or proceeding, the insured shall secure to the Company the right to so prosecute or provide defense in the action or proceeding, and all appeals therein, and permit the Company to use, at its option, the name of the insured for this purpose.

Whenever requested by the Company, the insured, at the Company's expense, shall give the Company all reasonable aid (i) in any action or proceeding, securing evidence, obtaining witnesses, prosecuting or defending the action or proceeding, or effecting settlement, and (ii) in any other lawful act which in the opinion of the Company may be necessary or desirable to establish the title to the estate or interest as insured. If the Company is prejudiced by the failure of the insured to furnish the required cooperation, the Company's obligations to the insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such cooperation.

5. PROOF OF LOSS OR DAMAGE.

In addition to and after the notices required under Section 3 of these Conditions and Stipulations have been provided the Company, a proof of loss or damage signed and sworn to by the insured claimant shall be furnished to the Company within 90 days after the insured claimant shall ascertain the facts giving rise to the loss or damage. The proof of loss or damage shall describe the defect in, or lien or encumbrance on the title, or other matter insured against by this policy which constitutes the basis of loss or damage and shall state, to the extent possible, the basis of calculating the amount of the loss or damage. If the Company is prejudiced by the failure of the insured claimant to provide the required proof of loss or damage, the Company's obligations to the insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such proof of loss or damage.

In addition, the insured claimant may reasonably be required to submit to examination under oath by any authorized representative of the Company and shall produce for examination, inspection and copying, at such reasonable times and places as may be designated by any authorized representative of the Company, all records, books, ledgers, checks, correspondence and memoranda, whether bearing a date before or after Date of Policy, which reasonably pertain to the loss or damage. Further, if requested by any authorized representative of the Company, the insured claimant shall grant its permission, in writing, for any authorized representative of the Company to examine, inspect and copy all records, books, ledgers, checks, correspondence and memoranda in the custody or control of a third party, which reasonably pertain to the loss or damage. All information designated as confidential by the insured claimant provided to the Company pursuant to this Section shall not be disclosed to others unless, in the reasonable judgment of the Company, it is necessary in the administration of the claim. Failure of the insured claimant to submit for examination under oath, produce other reasonably requested information or grant permission to secure reasonably necessary information from third parties as required in this paragraph shall terminate any liability of the Company under this policy as to that claim.

6. **OPTIONS TO PAY OR OTHERWISE SETTLE CLAIMS; TERMINATION OF LIABILITY.**

In case of a claim under this policy, the Company shall have the following additional options:

(a) To Pay or Tender Payment of the Amount of Insurance.

To pay or tender payment of the amount of insurance under this policy together with any costs, attorneys' fees and expenses incurred by the insured claimant, which were authorized by the Company, up to the time of payment or tender of payment and which the Company is obligated to pay.

Upon the exercise by the Company of this option, all liability and obligations to insured under this policy, other than to make the payment required, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, and the policy shall be surrendered to the Company for cancellation.

(b) To Pay or Otherwise Settle With Parties Other than the Insured or With the Insured Claimant.

(i) to pay or otherwise settle with other parties for or in the name of an insured claimant any claim insured against under this policy, together with any costs, attorneys' fees and expenses incurred by the insured claimant which were authorized by the Company up to the time of payment and which the Company is obligated to pay; or

(ii) to pay or otherwise settle with the insured claimant the loss or damage provided for under this policy, together with any costs, attorneys' fees and expenses incurred by the insured claimant which were authorized by the Company up to the time of payment and which the Company is obligated to pay.

Upon the exercise by the Company of either of the options provided for in paragraphs (b) (i) or (ii), the Company's obligations to the insured under this policy for the claimed loss or damage, other than the payments required to be made, shall terminate, including any liability or obligation to defend, prosecute or continue any litigation.

7. **DETERMINATION, EXTENT OF LIABILITY AND COINSURANCE.**

This policy is a contract of indemnity against actual monetary loss or damage sustained or incurred by the insured claimant who has suffered loss or damage by reason of matters insured against by this policy and only to the extent herein described.

(a) The liability of the Company under this policy shall not exceed the least of:

(i) the Amount of Insurance stated in Schedule A;

or,

(ii) the difference between the value of the insured estate or interest as insured and the value of the insured estate or interest subject to the defect, lien or encumbrance insured against by this policy.

(b) In the event the Amount of Insurance stated in Schedule A at the Date of Policy is less than 80 percent of the value of the insured estate or interest or the full consideration paid for the land, whichever is less, or if subsequent to the Date of Policy an improvement is erected on the land which increases the value of the insured estate or interest by at least 20 percent over the Amount of Insurance stated in Schedule A, then this Policy is subject to the following:

(i) where no subsequent improvement has been made, as to any partial loss, the Company shall only pay the loss pro rata in the proportion that the amount of insurance at Date of Policy bears to the total value of the insured estate or interest at Date of Policy; or (ii) where a subsequent improvement has been made, as to any partial loss, the Company shall only pay the loss pro rata in the proportion that 120 percent of the Amount of Insurance stated in Schedule A bears to the sum of the Amount of Insurance stated in Schedule A and the amount expended for the improvement. The provisions of this paragraph shall not apply to costs, attorneys' fees and expenses for which the Company is liable under this policy, and shall only apply to that portion of any loss which exceeds, in the aggregate, 10 percent of the Amount of Insurance stated in Schedule A.

(c) The Company will pay only those costs, attorneys' fees and expenses incurred in accordance with Section 4 of these Conditions and Stipulations.

8. **APPORTIONMENT.**

If the land described in Schedule (A) (C) consists of two or more parcels which are not used as a single site, and a loss is established affecting one or more of the parcels but not all, the loss shall be computed and settled on a pro rata basis as if the amount of insurance under this policy was divided pro rata as to the value on Date of Policy of each separate parcel to the whole, exclusive of any improvements made subsequent to Date of Policy, unless a liability or value has otherwise been agreed upon as to each parcel by the Company and the insured at the time of the issuance of this policy and shown by an express statement or by an endorsement attached to this policy.

9. **LIMITATION OF LIABILITY.**

(a) If the Company establishes the title, or removes the alleged defect, lien or encumbrance, or cures the lack of a right of access to or from the land, or cures the claim of unmarketability of title, all as insured, in a reasonably diligent manner by any method, including litigation and the completion of any appeals therefrom, it shall have fully performed its obligations with respect to that matter and shall not be liable for any loss or damage caused thereby.

(b) In the event of any litigation, including litigation by the Company or with the Company's consent, the Company shall have no liability for loss or damage until there has been a final determination by a court of competent jurisdiction, and disposition of all appeals therefrom, adverse to the title as insured.

(c) The Company shall not be liable for loss or damage to any insured for liability voluntarily assumed by the insured in settling any claim or suit without the prior written consent of the Company.

10. **REDUCTION OF INSURANCE; REDUCTION OR TERMINATION OF LIABILITY.**

All payments under this policy, except payments made for costs, attorneys' fees and expenses, shall reduce the amount of the insurance pro tanto.

11. **LIABILITY NONCUMULATIVE.**

It is expressly understood that the amount of insurance under this policy shall be reduced by any amount the Company may pay under any policy insuring a mortgage to which exception is taken in Schedule B or to which the insured has agreed, assumed, or taken subject, or which is hereafter executed by an insured and which is a charge or lien on the estate or interest described or referred to in Schedule A, and the amount so paid shall be deemed a payment under this policy to the insured owner.

12. **PAYMENT OF LOSS.**

(a) No payment shall be made without producing this policy for endorsement of the payment unless the policy has been lost or destroyed, in which case proof of loss or destruction shall be furnished to the satisfaction of the Company.

(b) When liability and the extent of loss or damage has been definitely fixed in accordance with these Conditions and Stipulations, the loss or damage shall be payable within 30 days thereafter.

13. **SUBROGATION UPON PAYMENT OR SETTLEMENT.**

(a) **The Company's Right of Subrogation.** Whenever the Company shall have settled and paid a claim under this policy, all right of subrogation shall vest in the Company unaffected by any act of the insured claimant.

The Company shall be subrogated to and be entitled to all rights and remedies which the insured claimant would have had against any person or property in respect to the claim had this policy not been issued. If requested by the Company, the insured claimant shall transfer to the Company all rights and remedies against any person or property necessary in order to perfect this right of subrogation. The insured claimant shall permit the Company to sue, compromise or settle in the name of the insured claimant and to use the name of the insured claimant in any transaction or litigation involving these rights or remedies.

If a payment on account of a claim does not fully cover the loss of the insured claimant, the Company shall be subrogated to these rights and remedies in the proportion which the Company's payment bears to the whole amount of the loss.

If loss should result from any act of the insured claimant, as stated above, that act shall not void this policy, but the Company, in that event, shall be required to pay only that part of any losses insured against by this policy which shall exceed the amount, if any, lost to the Company by reason of the impairment by the insured claimant of the Company's right of subrogation.

(b) **The Company's Rights Against Non-Insured Obligors.**

The Company's right of subrogation against non-insured obligors shall exist and shall include, without limitation, the rights of the insured to indemnities, guaranties, other policies of insurance or bonds, notwithstanding any terms or conditions contained in those instruments which provide for subrogation rights by reason of this policy.

14. ARBITRATION

Unless prohibited by applicable law, either the Company or the insured may demand arbitration pursuant to the Title Insurance Arbitration Rules of the American Arbitration Association. Arbitrable matters may include, but are not limited to, any controversy or claim between the Company and the insured arising out of or relating to this policy, any service of the Company in connection with its issuance or the breach of a policy provision or other obligation. All arbitrable matters when the Amount of Insurance is $1,000,000 or less shall be arbitrated at the option of either the Company or the insured. All arbitrable matters when the Amount of Insurance is inexcess of $1,000,000 shall be arbitrated only when agreed to by both the Company and the insured. Arbitration pursuant to this policy and under the Rules in effect on the date the demand for arbitration is made or, at the option of the insured, the Rules in effect at Date of Policy shall be binding upon the parties. The award may include attorneys' fees only if the laws of the state in which the land is located permit a court to award attorneys' fees to a prevailing party. Judgment upon the award rendered by the Arbitrator(s) may be entered in any court having jurisdiction thereof.

The law of the situs of the land shall apply to an arbitration under the Title Insurance Arbitration Rules.

A copy of the Rules may be obtained from the Company upon request.

15. LIABILITY LIMITED TO THIS POLICY; POLICY ENTIRE CONTRACT.

(a) This policy together with all endorsements, if any, attached hereto by the Company is the entire policy and contract between the insured and the Company. In interpreting any provision of this policy, this policy shall be construed as a whole.

(b) Any claim of loss or damage, whether or not based on negligence, and which arises out of the status of the title to the estate or interest covered hereby or by any action asserting such claim, shall be restricted to this policy.

(c) No amendment of or endorsement to this policy can be made except by a writing endorsed hereon or attached hereto signed by either the President, a Vice President, the Secretary, an Assistant Secretary, or validating officer or authorized signatory of the Company.

16. SEVERABILITY.

In the event any provision of the policy is held invalid or unenforceable under applicable law, the policy shall be deemed not to include that provision and all other provisions shall remain in full force and effect.

17. NOTICES, WHERE SENT

All notices required to be given the Company and any statement in writing required to be furnished the Company shall include the number of this policy and shall be addressed to the Company at 1 First American Way, Santa Ana, California 92707, or to the office which issued this policy.

First American

First American Title Insurance Company
4801 East Washington Street, Suite 150
Phoenix, AZ 85034
602-685-7840 / Fax 602-685-7848

American Land Management, L.L.C.
6101 S. Mustang Circle
Sioux Falls, SD 57108

November 05, 2004

Contact:	**Policy Department**
Phone:	**602-685-7840**
Order Number:	**291-4356303**
Property:	**Vacant Land** **, AZ**

Attached please find the following item(s):

Policy of Title Insurance

Thank you for your confidence and support. We at First American Title Insurance Company maintain the fundamental principle:

Customer First!
First American Title

Form No. 1402.92
(10/17/92)
ALTA Owner's Policy

POLICY OF TITLE INSURANCE

ISSUED BY

First American Title Insurance Company

SUBJECT TO THE EXCLUSIONS FROM COVERAGE, THE EXCEPTIONS FROM COVERAGE CONTAINED IN SCHEDULE B AND THE CONDITIONS AND STIPULATIONS, FIRST AMERICAN TITLE INSURANCE COMPANY, a California corporation, herein called the Company, insures, as of Date of Policy shown in Schedule A, against loss or damage, not exceeding the Amount of Insurance stated in Schedule A, sustained or incurred by the insured by reason of:

1. Title to the estate or interest described in Schedule A being vested other than as stated therein;
2. Any defect in or lien or encumbrance on the title;
3. Unmarketability of the title;
4. Lack of a right of access to and from the land.

The Company will also pay the costs, attorneys' fees and expenses incurred in defense of the title, as insured, but only to the extent provided in the Conditions and Stipulations.

First American Title Insurance Company

BY Gary L. Kermott PRESIDENT

ATTEST Mark R. Arneson SECRETARY

FIRST AMERICAN TITLE INSURANCE COMPANY INCORPORATED SEPTEMBER 24, 1963 CALIFORNIA

Form No. 1402.92
(10/17/92)
ALTA Owner's Policy

SCHEDULE OF EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims or other matters:
   (a) created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy; or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the estate or interest insured by this policy.
4. Any claim, which arises out of the transaction vesting in the Insured the estate or interest insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
   (i) the transaction creating the estate or interest insured by this policy being deemed a fraudulent conveyance or fraudulent transfer; or
   (ii) the transaction creating the estate or interest insured by this policy being deemed a preferential transfer except where the preferential transfer results from the failure:
      (a) to timely record the instrument of transfer; or
      (b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

First American Title Insurance Company

SCHEDULE A

Type of Coverage: **ALTA Standard Owner's (1992)**

Amount of Insurance **$20,000.00**

Date of Policy: November 02, 2004
To and include Book 5282 of Official Records at Page 109

1. Name of Insured:

   American Land Management, L.L.C., a South Dakota limited liability company

2. The estate or interest in the land which is covered by this Policy is fee.

3. Title to the estate or interest in the land is vested in:

   American Land Management, L.L.C., a South Dakota limited liability company

4. The land referred to in this policy is situated in the State of Arizona, County of Mohave and described as follows:

SEE EXHIBIT " A" ATTACHED HEREIN

EXHIBIT "A"

LOT 47, OF TRACT 27-27-20 (FLANNERY & ALLEN), ACCORDING TO THE PLAT THEREOF, RECORDED AUGUST 18, 1930, IN THE OFFICE OF THE COUNTY RECORDER OF MOHAVE COUNTY, ARIZONA.

EXCEPT ALL OIL, GAS, COAL AND MINERALS AS RESERVED IN DEED RECORDED IN BOOK 37 OF DEEDS, PAGE 236, RECORDS OF MOHAVE COUNTY, ARIZONA.

SCHEDULE B

This policy does not insure against loss or damage, nor against costs, attorneys' fees or expenses, any or all of which arise by reason of the following:

PART ONE:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or by making inquiry of persons in possession thereof.

3. Easements, liens, or encumbrances, or claims thereof, which are not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water; whether or not the aforementioned matters excepted are shown by the public records.

6. Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the public records.

SCHEDULE B

PART TWO:

1. Any district, improvement district, assessments or bond as disclosed by the records of the office of the Mohave County Assessor or Treasurer.

2. The right to enter upon said land, prospect for, mine and remove all coal, oil, gas and other mineral deposits as reserved in Deed recorded in Book 37 of Deeds, Page 236.

3. Easements, restrictions, reservations, conditions and set-back lines as set forth on the plat recorded in Book 18 of Surveys, Page 93, in Book 22 of Surveys, Page 76 and in Book 22 of Surveys, Page 85, but deleting any covenant, condition or restriction indicating a preference, limitation or discrimination based on race, color, religion, sex, handicap, familial status or national origin to the extent such covenants, conditions or restrictions violate 42 USC 3604(c).

4. The rights of the Santa Fe Pacific Railroad Company, its successors and assigns, to appropriate rights of way and rights incident to the operation of railways, as reserved in Deed recorded in Book 37 of Deeds, Page 236.

5. An easement for utility and incidental purposes, recorded in Book 3261, Page 672.

6. The effect of a map purporting to show the land recorded in Book 18 of Surveys, Page 93, in Book 22 of Surveys, Page 76 and in Book 22 of Surveys, Page 85.

7. The lack of a right of access to and from the land.

End of Schedule B - Part II

Form No. 1402.92
(10/17/92)
ALTA Owner's Policy

CONDITIONS AND STIPULATIONS

1. DEFINITION OF TERMS

The following terms when used in this policy mean:

(a) "insured": the insured named in Schedule A, and, subject to any rights or defenses the Company would have had against the named insured, those who succeed to the interest of the named insured by operation of law as distinguished from purchase including, but not limited to, heirs, distributees, devisees, survivors, personal representatives, next of kin, or corporate or fiduciary successors.

(b) "insured claimant": an insured claiming loss or damage.

(c) "knowledge" or "known": actual knowledge, not constructive knowledge or notice which may be imputed to an insured by reason of the public records as defined in this policy or any other records which impart constructive notice of matters affecting the land.

(d) "land": the land described or referred to in Schedule A, and improvements affixed thereto which by law constitute real property. The term "land" does not include any property beyond the lines of the area described or referred to in Schedule A, nor any right, title, interest, estate or easement in abutting streets, roads, avenues, alleys, lanes, ways or waterways, but nothing herein shall modify or limit the extent to which a right of access to and from the land is insured by this policy.

(e) "mortgage": mortgage, deed of trust, trust deed, or other security instrument.

(f) "public records": records established under state statutes at Date of Policy for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without knowledge. With respect to Section 1(a)(iv) of the Exclusions From Coverage, "public records" shall also include environmental protection liens filed in the records of the clerk of the United States district court for the district in which the land is located.

(g) "unmarketability of the title": an alleged or apparent matter affecting the title to the land, not excluded or excepted from coverage, which would entitle a purchaser of the estate or interest described in Schedule A to be released from the obligation to purchase by virtue of a contractual condition requiring the delivery of marketable title.

2. CONTINUATION OF INSURANCE AFTER CONVEYANCE OF TITLE.

The coverage of this policy shall continue in force as of Date of Policy in favor of an insured only so long as the insured retains an estate or interest in the land, or holds an indebtedness secured by a purchase money mortgage given by a purchaser from the insured, or only so long as the insured shall have liability by reason of covenants of warranty made by the insured in any transfer or conveyance of the estate or interest. This policy shall not continue in force in favor of any purchaser from the insured of either (i) an estate or interest in the land, or (ii) an indebtedness secured by a purchase money mortgage given to the insured.

3. NOTICE OF CLAIM TO BE GIVEN BY INSURED CLAIMANT.

The insured shall notify the Company promptly in writing (i) in case of any litigation as set forth in Section 4(a) below, (ii) in case knowledge shall come to an insured hereunder of any claim of title or interest which is adverse to the title to the estate or interest, as insured, and which might cause loss or damage for which the Company may be liable by virtue of this policy, or (iii) if title to the estate or interest, as insured, is rejected as unmarketable. If prompt notice shall not be given to the Company, then as to the insured all liability of the Company shall terminate with regard to the matter or matters for which prompt notice is required; provided, however, that failure to notify the Company shall in no case prejudice the rights of any insured under this policy unless the Company shall be prejudiced by the failure and then only to the extent of the prejudice.

4. DEFENSE AND PROSECUTION OF ACTIONS; DUTY OF INSURED CLAIMANT TO COOPERATE.

(a) Upon written request by the insured and subject to the options contained in Section 6 of these Conditions and Stipulations, the Company, at its own cost and without unreasonable delay, shall provide for the defense of an insured in litigation in which any third party asserts a claim adverse to the title or interest as insured, but only as to those stated causes of action alleging a defect, lien or encumbrance or other matter insured against by this policy. The Company shall have the right to select counsel of its choice (subject to the right of the insured to object for reasonable cause) to represent the insured as to those stated causes of action and shall not be liable for and will not pay the fees of any other counsel. The Company will not pay any fees, costs or expenses incurred by the insured in the defense of those causes of action which allege matters not insured against by this policy.

(b) The Company shall have the right, at its own cost, to institute and prosecute any action or proceeding or to do any other act which in its opinion may be necessary or desirable to establish the title to the estate or interest, as insured, or to prevent or reduce loss or damage to the insured. The Company may take any appropriate action under the terms of this policy, whether or not it shall be liable hereunder, and shall not thereby concede liability or waive any provision of this policy. If the Company shall exercise its rights under this paragraph, it shall do so diligently.

(c) Whenever the Company shall have brought an action or interposed a defense as required or permitted by the provisions of this policy, the Company may pursue any litigation to final determination by a court of competent jurisdiction and expressly reserves the right, in its sole discretion, to appeal from any adverse judgment or order.

(d) In all cases where this policy permits or requires the Company to prosecute or provide for the defense of any action or proceeding, the insured shall secure to the Company the right to so prosecute or provide defense in the action or proceeding, and all appeals therein, and permit the Company to use, at its option, the name of the insured for this purpose. Whenever requested by the Company, the insured, at the Company's expense, shall give the Company all reasonable aid (i) in any action or proceeding, securing evidence, obtaining witnesses, prosecuting or defending the action or proceeding, or effecting settlement, and (ii) in any other lawful act which in the opinion of the Company may be necessary or desirable to establish the title to the estate or interest as insured. If the Company is prejudiced by the failure of the insured to furnish the required cooperation, the Company's obligations to the insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such cooperation.

5. PROOF OF LOSS OR DAMAGE.

In addition to and after the notices required under Section 3 of these Conditions and Stipulations have been provided the Company, a proof of loss or damage signed and sworn to by the insured claimant shall be furnished to the Company within 90 days after the insured claimant shall ascertain the facts giving rise to the loss or damage. The proof of loss or damage shall describe the defect in, or lien or encumbrance on the title, or other matter insured against by this policy which constitutes the basis of loss or damage and shall state, to the extent possible, the basis of calculating the amount of the loss or damage. If the Company is prejudiced by the failure of the insured claimant to provide the required proof of loss or damage, the Company's obligations to the insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such proof of loss or damage.

In addition, the insured claimant may reasonably be required to submit to examination under oath by any authorized representative of the Company and shall produce for examination, inspection and copying, at such reasonable times and places as may be designated by any authorized representative of the Company, all records, books, ledgers, checks, correspondence and memoranda, whether bearing a date before or after Date of Policy, which reasonably pertain to the loss or damage. Further, if requested by any authorized representative of the Company, the insured claimant shall grant its permission, in writing, for any authorized representative of the Company to examine, inspect and copy all records, books, ledgers, checks, correspondence and memoranda in the custody or control of a third party, which reasonably pertain to the loss or damage. All information designated as confidential by the insured claimant provided to the Company pursuant to this Section shall not be disclosed to others unless, in the reasonable judgment of the Company, it is necessary in the administration of the claim. Failure of the insured claimant to submit for examination under oath, produce other reasonably requested information or grant permission to secure reasonably necessary information from third parties as required in this paragraph shall terminate any liability of the Company under this policy as to that claim.

6. **OPTIONS TO PAY OR OTHERWISE SETTLE CLAIMS; TERMINATION OF LIABILITY.**

In case of a claim under this policy, the Company shall have the following additional options:

(a) To Pay or Tender Payment of the Amount of Insurance.

To pay or tender payment of the amount of insurance under this policy together with any costs, attorneys' fees and expenses incurred by the insured claimant, which were authorized by the Company, up to the time of payment or tender of payment and which the Company is obligated to pay.

Upon the exercise by the Company of this option, all liability and obligations to insured under this policy, other than to make the payment required, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, and the policy shall be surrendered to the Company for cancellation.

(b) To Pay or Otherwise Settle With Parties Other than the Insured or With the Insured Claimant.

(i) to pay or otherwise settle with other parties for or in the name of an insured claimant any claim insured against under this policy, together with any costs, attorneys' fees and expenses incurred by the insured claimant which were authorized by the Company up to the time of payment and which the Company is obligated to pay; or

(ii) to pay or otherwise settle with the insured claimant the loss or damage provided for under this policy, together with any costs, attorneys' fees and expenses incurred by the insured claimant which were authorized by the Company up to the time of payment and which the Company is obligated to pay.

Upon the exercise by the Company of either of the options provided for in paragraphs (b) (i) or (ii), the Company's obligations to the insured under this policy for the claimed loss or damage, other than the payments required to be made, shall terminate, including any liability or obligation to defend, prosecute or continue any litigation.

7. **DETERMINATION, EXTENT OF LIABILITY AND COINSURANCE.**

This policy is a contract of indemnity against actual monetary loss or damage sustained or incurred by the insured claimant who has suffered loss or damage by reason of matters insured against by this policy and only to the extent herein described.

(a) The liability of the Company under this policy shall not exceed the least of:

(i) the Amount of Insurance stated in Schedule A;

or,

(ii) the difference between the value of the insured estate or interest as insured and the value of the insured estate or interest subject to the defect, lien or encumbrance insured against by this policy.

(b) In the event the Amount of Insurance stated in Schedule A at the Date of Policy is less than 80 percent of the value of the insured estate or interest or the full consideration paid for the land, whichever is less, or if subsequent to the Date of Policy an improvement is erected on the land which increases the value of the insured estate or interest by at least 20 percent over the Amount of Insurance stated in Schedule A, then this Policy is subject to the following:

(i) where no subsequent improvement has been made, as to any partial loss, the Company shall only pay the loss pro rata in the proportion that the amount of insurance at Date of Policy bears to the total value of the insured estate or interest at Date of Policy; or (ii) where a subsequent improvement has been made, as to any partial loss, the Company shall only pay the loss pro rata in the proportion that 120 percent of the Amount of Insurance stated in Schedule A bears to the sum of the Amount of Insurance stated in Schedule A and the amount expended for the improvement. The provisions of this paragraph shall not apply to costs, attorneys' fees and expenses for which the Company is liable under this policy, and shall only apply to that portion of any loss which exceeds, in the aggregate, 10 percent of the Amount of Insurance stated in Schedule A.

(c) The Company will pay only those costs, attorneys' fees and expenses incurred in accordance with Section 4 of these Conditions and Stipulations.

8. **APPORTIONMENT.**

If the land described in Schedule (A) (C) consists of two or more parcels which are not used as a single site, and a loss is established affecting one or more of the parcels but not all, the loss shall be computed and settled on a pro rata basis as if the amount of insurance under this policy was divided pro rata as to the value on Date of Policy of each separate parcel to the whole, exclusive of any improvements made subsequent to Date of Policy, unless a liability or value has otherwise been agreed upon as to each parcel by the Company and the insured at the time of the issuance of this policy and shown by an express statement or by an endorsement attached to this policy.

9. **LIMITATION OF LIABILITY.**

(a) If the Company establishes the title, or removes the alleged defect, lien or encumbrance, or cures the lack of a right of access to or from the land, or cures the claim of unmarketability of title, all as insured, in a reasonably diligent manner by any method, including litigation and the completion of any appeals therefrom, it shall have fully performed its obligations with respect to that matter and shall not be liable for any loss or damage caused thereby.

(b) In the event of any litigation, including litigation by the Company or with the Company's consent, the Company shall have no liability for loss or damage until there has been a final determination by a court of competent jurisdiction, and disposition of all appeals therefrom, adverse to the title as insured.

(c) The Company shall not be liable for loss or damage to any insured for liability voluntarily assumed by the insured in settling any claim or suit without the prior written consent of the Company.

10. **REDUCTION OF INSURANCE; REDUCTION OR TERMINATION OF LIABILITY.**

All payments under this policy, except payments made for costs, attorneys' fees and expenses, shall reduce the amount of the insurance pro tanto.

11. **LIABILITY NONCUMULATIVE.**

It is expressly understood that the amount of insurance under this policy shall be reduced by any amount the Company may pay under any policy insuring a mortgage to which exception is taken in Schedule B or to which the insured has agreed, assumed, or taken subject, or which is hereafter executed by an insured and which is a charge or lien on the estate or interest described or referred to in Schedule A, and the amount so paid shall be deemed a payment under this policy to the insured owner.

12. **PAYMENT OF LOSS.**

(a) No payment shall be made without producing this policy for endorsement of the payment unless the policy has been lost or destroyed, in which case proof of loss or destruction shall be furnished to the satisfaction of the Company.

(b) When liability and the extent of loss or damage has been definitely fixed in accordance with these Conditions and Stipulations, the loss or damage shall be payable within 30 days thereafter.

13. **SUBROGATION UPON PAYMENT OR SETTLEMENT.**

(a) **The Company's Right of Subrogation.** Whenever the Company shall have settled and paid a claim under this policy, all right of subrogation shall vest in the Company unaffected by any act of the insured claimant.

The Company shall be subrogated to and be entitled to all rights and remedies which the insured claimant would have had against any person or property in respect to the claim had this policy not been issued. If requested by the Company, the insured claimant shall transfer to the Company all rights and remedies against any person or property necessary in order to perfect this right of subrogation. The insured claimant shall permit the Company to sue, compromise or settle in the name of the insured claimant and to use the name of the insured claimant in any transaction or litigation involving these rights or remedies.

If a payment on account of a claim does not fully cover the loss of the insured claimant, the Company shall be subrogated to these rights and remedies in the proportion which the Company's payment bears to the whole amount of the loss.

If loss should result from any act of the insured claimant, as stated above, that act shall not void this policy, but the Company, in that event, shall be required to pay only that part of any losses insured against by this policy which shall exceed the amount, if any, lost to the Company by reason of the impairment by the insured claimant of the Company's right of subrogation.

(b) **The Company's Rights Against Non-Insured Obligors.**

The Company's right of subrogation against non-insured obligors shall exist and shall include, without limitation, the rights of the insured to indemnities, guaranties, other policies of insurance or bonds, notwithstanding any terms or conditions contained in those instruments which provide for subrogation rights by reason of this policy.

14. ARBITRATION

Unless prohibited by applicable law, either the Company or the insured may demand arbitration pursuant to the Title Insurance Arbitration Rules of the American Arbitration Association. Arbitrable matters may include, but are not limited to, any controversy or claim between the Company and the insured arising out of or relating to this policy, any service of the Company in connection with its issuance or the breach of a policy provision or other obligation. All arbitrable matters when the Amount of Insurance is $1,000,000 or less shall be arbitrated at the option of either the Company or the insured. All arbitrable matters when the Amount of Insurance is inexcess of $1,000,000 shall be arbitrated only when agreed to by both the Company and the insured. Arbitration pursuant to this policy and under the Rules in effect on the date the demand for arbitration is made or, at the option of the insured, the Rules in effect at Date of Policy shall be binding upon the parties. The award may include attorneys' fees only if the laws of the state in which the land is located permit a court to award attorneys' fees to a prevailing party. Judgment upon the award rendered by the Arbitrator(s) may be entered in any court having jurisdiction thereof.

The law of the situs of the land shall apply to an arbitration under the Title Insurance Arbitration Rules.

A copy of the Rules may be obtained from the Company upon request.

15. LIABILITY LIMITED TO THIS POLICY; POLICY ENTIRE CONTRACT.

(a) This policy together with all endorsements, if any, attached hereto by the Company is the entire policy and contract between the insured and the Company. In interpreting any provision of this policy, this policy shall be construed as a whole.

(b) Any claim of loss or damage, whether or not based on negligence, and which arises out of the status of the title to the estate or interest covered hereby or by any action asserting such claim, shall be restricted to this policy.

(c) No amendment of or endorsement to this policy can be made except by a writing endorsed hereon or attached hereto signed by either the President, a Vice President, the Secretary, an Assistant Secretary, or validating officer or authorized signatory of the Company.

16. SEVERABILITY.

In the event any provision of the policy is held invalid or unenforceable under applicable law, the policy shall be deemed not to include that provision and all other provisions shall remain in full force and effect.

17. NOTICES, WHERE SENT

All notices required to be given the Company and any statement in writing required to be furnished the Company shall include the number of this policy and shall be addressed to the Company at 1 First American Way, Santa Ana, California 92707, or to the office which issued this policy.

POLICY OF TITLE INSURANCE
Issued by
Transnation Title Insurance Company
SCHEDULE A

Amount of Insurance: **$1,270,000.00** Policy/File No.: **01379290**

Date of Policy: **August 23, 2004 at 2004-078058**

Name of Insured:

Sedora, LLC, a Nevada Limited Liability Company

1. The estate or interest referred to herein is at the Date of Policy vested in:

   Sedora, LLC, a Nevada Limited Liability Company

2. The estate or interest in the land described herein and which is covered by this policy is:

   A FEE

3. The land referred to in this policy is situated in the County of Mohave, State of ARIZONA, and is more particularly described in Exhibit "A" attached hereto and made a part hereof.

Countersigned:

By Vicky C Castillo
Authorized Officer or Agent

EXHIBIT "A"

Government Lot 1, the South half of the Northeast quarter, the Northwest quarter of the Northeast quarter, the Northwest quarter and the South half of Section 23, Township 27 North, Range 20 West, of the Gila and Salt River Base and Meridian, Mohave County, Arizona;

Except all that portion within the boundaries of Bonita M.S. 1253A and all veins, lodes and ledges, throughout their entire depth the tops or apexes of which may be inside of said excluded portion, as set forth in said Patent.

Except therefrom all coal, oil, gas and mineral deposits as reserved in instrument recorded in Book 37 of Deeds, page 236.

SCHEDULE B

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage, nor against costs, attorneys fees or expenses, any or all of which arise by reason of the following:

PART I

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices or such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.

3. Easements, liens or encumbrances, or claims thereof, which are not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortages in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, and agreements, covenants, conditions or rights incident thereto, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.

SCHEDULE B

EXCEPTIONS FROM COVERAGE

PART II

THIS POLICY DOES NOT INSURE AGAINST LOSS OR DAMAGE BY REASON OF THE FOLLOWING:

1. OBLIGATIONS imposed upon said land by its inclusion within any district formed pursuant to Title 48, Arizona Revised Statutes, excluding however Municipal or County Improvement Districts.

2. TAXES AND ASSESSMENTS collectible by the County Treasurer, a lien not yet due and payable for the following year:

   2004

3. RESERVATIONS, exceptions, covenants, conditions and rights reserved or imposed in Deed from Santa Fe Pacific Railroad Company, recorded in

Book	37 of deeds
Page	236

4. EASEMENT and rights incident thereto, as set forth in instrument:

Recorded in Book	37 of Deeds
Page	236
Purpose	telephone and telegraph lines

5. THE LACK of a legal right of access recorded in insurable form to and from said land to a public street.
   Notwithstanding the affirmative assurance of Paragraph 4, the Company is unwilling to insure access.

6. DEED OF TRUST given to secure the original amount shown below, and any other amount payable under the terms thereof:

Amount	$1,143,000.00
Dated	July 28, 2004
Recorded	August 23, 2004
Book	5170 of Official Records
Page	473
Trustor	Sedora, LLC, a Nevada Limited Liability Company
Trustee	Transnation Title Insurance Company, a Corporation
Beneficiary	William Eversole, Trustee of the White Hill Trust #12

POLICY OF TITLE INSURANCE
Issued by
Transnation Title Insurance Company
SCHEDULE A

Amount of Insurance: **$1,040,000.00** Policy/File No.: **01379288**

Date of Policy: **August 23, 2004 at Fee No. 2004-078048**

Name of Insured:

Sedora, LLC, a Nevada Limited Liability Company

1. The estate or interest referred to herein is at the Date of Policy vested in:

   Sedora, LLC, a Nevada Limited Liability Company

2. The estate or interest in the land described herein and which is covered by this policy is:

   A FEE

3. The land referred to in this policy is situated in the County of Mohave, State of ARIZONA, and is more particularly described in Exhibit "A" attached hereto and made a part hereof.

Countersigned:

By Vicky C Castillo
Authorized Officer or Agent

EXHIBIT "A"

The East half of the West half of Section 20, Township 27 North, Range 20 West, of the Gila and Salt River Base and Meridian, Mohave County, Arizona;

EXCEPT that portion lying within the right-of-way of White Hills Road as set forth in Book 274 of Official Records, page 72, records of Mohave County, Arizona;

EXCEPT all mineral deposits and rights as reserved by State of Arizona in Deed recorded in Book 53 of Deeds, page 251 records of Mohave County, Arizona.

SCHEDULE B

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage, nor against costs, attorneys fees or expenses, any or all of which arise by reason of the following:

PART I

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices or such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.

3. Easements, liens or encumbrances, or claims thereof, which are not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortages in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, and agreements, covenants, conditions or rights incident thereto, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.

SCHEDULE B
EXCEPTIONS FROM COVERAGE

PART II

THIS POLICY DOES NOT INSURE AGAINST LOSS OR DAMAGE BY REASON OF THE FOLLOWING:

1. OBLIGATIONS imposed upon said land by its inclusion within any district formed pursuant to Title 48, Arizona Revised Statutes, excluding however Municipal or County Improvement Districts.

2. TAXES AND ASSESSMENTS collectible by the County Treasurer, a lien not yet due and payable for the following year:

   2004

3. THE RIGHT OF ENTRY to prospect for, mine and remove the mineral deposits in said land as reserved in Deed:

Recorded in Book	53 of Deeds
Page	251

4. SUCH RIGHTS as Citizens Utilities Company may have under the Act of March 4, 1911 (36 stat. 1253, 43 U.S.C. 961) as disclosed in Patent recorded in Book 1058 of Official Records, page 594.
   (Affects the East half of the Northwest quarter and the Southeast quarter of the Southwest quarter of said Section 20)

5. SUCH RIGHTS as the Mohave County Board of Supervisors may have under the Act of October 21, 1976 (90 stat. 2776, 43 U.S.C. 1761), as disclosed in Patent recorded in Book 1058 of Official Records, page 594.
   (Affects the East half of the Northwest quarter and the Southeast quarter of the Southwest quarter of said Section 20)

6. EASEMENT and rights incident thereto, as set forth in instrument:

Recorded in Book	3040 of Official Records
Page	260
Purpose	ingress, egress and public utilities

7. EASEMENT and rights incident thereto, as set forth in instrument:

Recorded in Book	3094 of Official Records
Page	930
Purpose	utilities

SCHEDULE B – Part II

Continued

8. EASEMENT and rights incident thereto, as set forth in instrument:

Recorded in Book	3261 of Official Records
Page	670
Purpose	utilities

9. DEED OF TRUST given to secure the original amount shown below, and any other amount payable under the terms thereof:

Amount	$936,000.00
Dated	July 28, 2004
Recorded	August 23, 2004
Book	5170 of Official Records
Page	426
Trustor	Sedora, LLC, a Nevada Limited Liability Company
Trustee	Transnation Title Insurance Company, a corporation
Beneficiary	William Eversole, Trustee of The White Hills Trust #17 dated October 01, 1993.

No. 23639

The United States of America

To all to whom these presents shall come, Greeting:

WHEREAS,

Chrystal Collins and Grover Collins,

are entitled to a Land Patent pursuant to Section 8, Act of June 28, 1934 (48 Stat. 1272), as amended; 43 U.S.C. 315g), in exchange for certain other lands situated in the State of Arizona, for the following described lands:

Gila and Salt River Meridian, Arizona.

T. 21 N., R. 18 W.,
Sec. 7, Lot 1, S½NE¼, SE¼NW¼;
Sec. 10, All;
Sec. 14, S½;
Sec. 18, Lots 1, 2, 3, 4, E½, E½W½;
Sec. 22, All;
Sec. 24, All;
Sec. 26, All;
Sec. 28, N½NE¼;

T. 21 N., R. 19 W.,
Sec. 12, All;

Containing 4,396.93 acres;

NOW KNOW YE, that there is, therefore, granted by the UNITED STATES unto the above named claimants the lands above described; TO HAVE AND TO HOLD the said lands with all the rights, privileges, immunities, and appurtenances, of whatsoever nature, thereunto belonging, unto the said claimants, their heirs and assigns forever;

EXCEPTING AND RESERVING TO THE UNITED STATES:

1. A right-of-way for ditches and canals constructed by the authority of the United States. Act of August 30, 1890, 26 Stat. 391; 43 U.S.C. 945;

2. Reserving all minerals to the United States, in the lands so granted, together with the right to mine and remove the same under the applicable laws and regulations; and subject to the above reservations;

3. A right-of-way for telephone and telegraph lines purposes as have been granted to the American Telephone and Telegraph Company, by right-of-way FHX 066344 under the Act of March 4, 1911 (36 Stat. 1253; 43 U.S.C. 961) in to N½S½, said sec. 12, T. 21 N., R. 19 W., and S½S½, said sec. 10, T. 21 N., R. 18 W.;

Patent Number 02-69-003

[illegible] right-of-way for [illegible] purposes as have been granted to the [illegible] Utilities Power Company, by right-of-way AR 034826 under the Act of March 4, 1911 (36 Stat. 1253; 43 U.S.C. 961) as to [illegible], said sec. 12, T. 21 N., R. 19 W., and [illegible], said sec. 10, T. 21 N., R. 18 W.;

5. A right-of-way for transmission line purposes as have been granted to the Citizens Utilities Company, by right-of-way AR 034990 under the Act of March 4, 1911 (36 Stat. 1253; 43 U.S.C. 961) as to W½W½, said sec. 12, T. 21 N., R. 18 W.;

6. A right-of-way for Federal Aid Highway Drainage Easement purposes as have been granted to the Arizona Highway Department, by right-of-way AR 033721; said easement constructed under the Act of August 27, 1958; as amended; 23 U.S.C. 317 (1964) as to SW¼SW¼NW¼, said sec. 12, T. 21 N., R. 19 W., and SW¼SW¼NE¼, said sec. 7, T. 21 N., R. 18 W.;

7. A right-of-way for transmission line purposes as have been granted to Citizens Utilities Company, by right-of-way AR 033291, under the Act of March 4, 1911 (36 Stat. 1253; 43 U.S.C. 961) as to S½NE¼, SE¼NW¼, W½NW¼, said sec. 12, T. 21 N., R. 19 W., and Lot 2, SE¼NW¼, S½NE¼, said sec. 7, T. 21 N., R. 18 W.;

8. A right-of-way for Federal Aid Material Site purposes as have been granted to Arizona Highway Department, by right-of-way PHX 083061 under the Act of November 9, 1921 (42 Stat. 212-216; 23 U.S.C. Sec. 18) as to SE¼NE¼NE¼ and E½SE¼NE¼, said sec. 10, T. 21 N., R. 18 W.;

9. A right-of-way for railroad purposes as have been granted to Western Arizona Railroad Company by right-of-way PHX 043230, under the Act of March 3, 1875 (18 Stat. 482; 43 U.S.C. 934-939) as to NW¼, said sec. 10, SW¼, said sec. 14, and E½, said sec. 26, T. 21 N., R. 18 W.;

10. A right-of-way for coal slurry pipeline purposes as have been granted to Black Mesa Pipeline, Inc. by right-of-way A 438, under the Act of February 15, 1901 (31 Stat. 790; 43 U.S.C. 959) as to S½S½, said sec. 10, T. 21 N., R. 18 W.;

11. A right-of-way for water pipeline purposes as have been granted to Duval Corporation, a Texas corporation, by right-of-way AR 032609, under the Act of February 15, 1901 (31 Stat. 790; 43 U.S.C. 959) as to S½S½, said sec. 10, T. 21 N., R. 18 W.;

Patent Number 02-69-0034

12. A Certificate of Exemption [illegible] have been [illegible] the United States, by [illegible] PHX 063786, under the [illegible] 5, 1926 (43 Stat. 1304; [illegible] ed to the W½N½, said sec. 21 [illegible] said sec. 24, T. 21 N., R. 18 W.

IN TESTIMONY WHEREOF, the undersigned authorized officer of the Bureau of Land Management, in accordance with the provisions of the Act of June 17, 1948 (62 Stat. 476), has, by direction of the United States, caused these letters to be made Patent, and the Seal of the Bureau to be hereunto affixed.

GIVEN under my hand, at Phoenix, Arizona, the SEVENTH day of NOVEMBER in the year of our Lord nine thousand nine hundred and SIXTY-EIGHT and of the Independence of the United States the one hundred and SIXTY-THIRD.

By Roy T. Hildebrandt
Acting Manager, Arizona Land Office.

Patent Number 02-69-0024

RECORDED AND INDEXED IN THE MINUTES OF THE BOARD OF SUPERVISORS

[illegible] 19 [illegible] Mon. Nov. [illegible] o'clock P.M.

[illegible] PAGES 383 - 386

RECORDER OF MOHAVE COUNTY, ARIZONA

By [illegible] Deputy Recorder

$1419 INDEXED

[illegible] December 20

[illegible] party of the second part, WITNESSETH:

That the said party of the first part, for and in consideration of the sum of TEN DOLLARS ($10.00) and other good and valuable consideration, to it in hand paid by the said party of the second part, the receipt of which is hereby acknowledged, does hereby convey to said party of the second part, its successors and assigns forever, that certain property situate in the County of Mohave, State of Arizona, described as follows:

IN TOWNSHIP SEVENTEEN (17) NORTH, RANGE EIGHTEEN (18) WEST OF THE GILA AND SALT RIVER BASE AND MERIDIAN:

The West half of the West half of the West half of Section One (1); All of Sections Three (3), Five (5), Seven (7), Nine (9), Eleven (11), Thirteen (13), Fifteen (15), Seventeen (17), Nineteen (19), Twenty-one (21), Twenty-three (23), Twenty-seven (27), Twenty-nine (29), Thirty-one (31), Thirty-three (33) and Thirty-five (35).

EXCEPT a strip of land 200 feet wide in the East half of Section 35, Township 17 North, Range 18 West conveyed to The Atchison, Topeka and Santa Fe Railway Company by deed dated June 28, 1937, recorded July 10, 1937, in Book 51 of Deeds, page 572, Mohave County Records; and

EXCEPT those portions of the East half of Section 23 and Southeast quarter of Northeast quarter and Southeast quarter of Section 35, Township 17 North, Range 18 West conveyed to The Atchison, Topeka and Santa Fe Railway Company by deed dated January 31, 1940, and recorded February 27, 1940, in Book 54 of Deeds, page 3, Mohave County Records.

[illegible] OF RESTRICTIONS

[illegible] ALL MEN BY THESE PRESENTS:

That TRANSAMERICA TITLE INSURANCE COMPANY, [illegible] Corp., [illegible] as Trustee, being the owner of all of the following described premises, situated within the County of Mohave, State of Arizona, to-wit:

Parcels 1 through 220, SUN-WEST ACRES, according to the plat recorded June 9, 1966 at Fee No. 8778 in the office of the County Recorder, Mohave County, Arizona

and desiring to amend those certain Declaration of Restrictions recorded in Docket 95, page 237, records of Mohave County, Arizona, hereby declares that Paragraph 7 of said Declaration of Restrictions is hereby deleted in its entirety.

Except as hereby amended, all other provisions of said Declaration of Restrictions shall remain in full force and effect and are ratified and reconfirmed as if herein set out in full.

IN WITNESS WHEREOF, the TRANSAMERICA TITLE INSURANCE COMPANY, as Trustee, has hereunto caused its corporate name to be signed, its corporate seal affixed, and the same to be attested by the signature of its duly authorized officer this 7th day of August, 1966.

TRANSAMERICA TITLE INSURANCE COMPANY,
as Trustee

By _____
Trust Officer

STATE OF ARIZONA }
County of Maricopa } ss.

Before me this 30th day of August, 1966, personally appeared [illegible] who acknowledged himself to be a Trust Officer of the TRANSAMERICA TITLE INSURANCE COMPANY and that he as such officer, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation as Trustee, by himself as such officer.

_____
Notary Public

My commission expires: [illegible]

TRANSAMERICA TITLE

Filed and Recorded at Request of [illegible]
SEP 1 '66 20 Min. Past 2 o'clock P. M.
DOCKET NO. 96 Page 107
Records of Mohave County, Arizona

By _____ Deputy Recorder

_____ Recorder

41243

[illegible], California

DECLARATION OF RESTRICTIONS

[illegible] THESE PRESENTS:

[illegible] TITLE [illegible] COMPANY, an Arizona Corporation, [illegible] being the owner of all of the following described premises, [illegible] the County of Mohave, State of Arizona, to-wit:

Parcels 1 through 220, [illegible] ACRES, according to the plat recorded June [illegible] 1966 at Fee No. 8778 in the office of the County Recorder, Mohave County, Arizona

does hereby declare said premises, subject to the following express covenants, stipulations and restrictions as to the use and enjoyment thereof, all of which are to be construed as a common plan and scheme and designed as reciprocal and mutually beneficial restrictions and restrictive covenants running with the title to said premises and with each and every part and parcel thereof, to-wit:

1. All structures shall be of new construction and no buildings may be moved from any other location; no buildings shall be erected until a dwelling house shall have been erected. No structure of temporary character, tent, shack or other outbuilding shall be used on any parcel at any time as a residence, either on a temporary or permanent basis. Dwelling house as used herein is hereby defined to be a permanent residence with foundation and such trailer or mobile home as hereinafter provided in Paragraph (6) below.

2. No single-family dwelling house containing one or two bedrooms and having a ground floor area of less than 700 square feet, exclusive of open porches and garages and no single-family dwelling containing three or more bedrooms and having a ground floor area of less than 800 square feet, exclusive of open porches and garages shall be erected, permitted or maintained on any of these parcels. Such family dwelling houses must be of masonry or insulated frame construction with decorative wood paneling if desired or of any other materials approved by the Control Committee.

3. No building shall be located on any parcel nearer than forty (40) feet from the front parcel line; nor nearer than twenty (20) feet from either side line, except for a garage or other approved accessory building; nor nearer than fifteen (15) feet from the rear parcel line.

4. All dwellings used for residential purposes shall install water flush toilets in all bathrooms, toilets or sanitary conveniences, and shall be kept in the buildings permitted hereunder. Until such time as sewers are available, all bathrooms, toilets, or sanitary conveniences shall be connected to septic tanks and constructed in accordance with requirements and standards of County and State laws, rules and regulations and in accordance with sound engineering, safety and health principles.

5. No unlawful, offensive, noxious or immoral activity or condition shall be carried on or maintained on any parcel, nor shall anything be done or permitted thereon which may be or become a nuisance or unsightly to the neighborhood. There shall not be stored, kept or maintained upon any parcel any old metal, [illegible] machinery or [illegible] material commonly designated as junk, trash or rubbish, unless the same be wholly enclosed in an approved permanent structure.

6. Factory made trailers or mobile homes may be placed on these parcels except parcels 121 through 143 so long as they are kept in a clean and orderly manner. Such trailers or mobile homes shall have two hundred square feet of permanent roof, excluding of trailer or mobile home roof, and two hundred square feet of concrete flooring, including cabana, storage, carports and garages, but exclusive of any [illegible] used as flooring or base for said trailer or mobile home. Said trailers or mobile homes must either (1) have complete [illegible] sanitary facilities which are maintained in a sanitary manner or (2) the sanitary conveniences must be connected to septic tanks as set forth in Paragraph (4) above.

7. No poultry, livestock or other animals other than the usual household pets or horses may be permitted on the land.

8. There is hereby created the SUN-WEST ACRES Control Committee consisting of three (3) persons appointed by the subdividers. No building, trailer or mobile home or other structure shall be erected, placed or permitted to remain on any parcel in this subdivision until a set of plans of the working drawings, to include boundary lines and set-backs is submitted to and approved in writing by at least two members of the Control Committee as meeting the requirements of these restrictions. The Committee shall act with due promptness and in the event the Committee shall fail to approve or disapprove any matter submitted to them hereunder within thirty (30) days from submission, the plan shall be deemed approved provided it meets the requirements of these restrictions. The above named members of the Control Committee shall serve until such time as ninety (90) per cent of said parcels in SUN-WEST ACRES are sold or until December 1, 1969 if 90% of said parcels have not been sold by this date whichever first occurs. At such time the parcel owners, upon request to the Committee shall elect by majority vote three (3) members from among the owners of said parcels to be substituted as a Control Committee in place of the persons named above. Members so elected to said Committee shall serve terms of three (3) years, [illegible] in the case of members first elected to serve on the Committee shall commence on the first day of the calendar month following the date of election. Election of said Committee shall be by written ballot distributed by mail by the Control Committee and to all parcel owners to their addresses as shown in the records of the Control Committee. Return ballots must be postmarked within 15 days of said mailing in order for said ballots to be counted. There will be one vote allocated to each individual parcel. In order to serve on the Control Committee, persons must either hold title to one or more of said parcels or must have entered into bona-fide contracts for the purchase of one or more of said parcels and must not have entered into any agreement providing for the sale of all of their rights, title and interest in said parcels. In the event of the death, resignation, incapacity or ineligibility of any member of the Committee appointed or elected under the terms of these restrictions, the remaining members of the Committee shall have full power to appoint a new member to act in lieu of the deceased, resigned, incapacitated, or ineligible member or members with appointed member to serve the unfinished term of the previous member.

In the event of any ambiguity in a provision of these restrictions, the interpretation of the Control Committee as to the meaning intended shall prevail.

9. The preceding restrictions and covenants may be altered, or otherwise changed by a majority vote of the Control Committee heretofore described; provided, however, that in no event may these restrictions be terminated in their entirety.

[illegible]

[illegible] may [illegible] document [illegible] and [illegible] Offic- [illegible] more of [illegible] or which [illegible] part thereof.

[illegible]

[illegible] day of [illegible]

[illegible] COMPANY,
as Trustee

By: [illegible]
Trust Officer

State of [illegible]
County of [illegible]

[illegible] 1986 personally appeared [illegible] Trust Officer [illegible] such officer, [illegible] for the [illegible] corporation as [illegible]

[illegible]
Notary Public

[illegible]

RESOLUTION NO. 83-5

RESOLUTION OF THE BOARD OF DIRECTORS OF
THE MOHAVE COUNTY FLOODPLAIN BOARD

WHEREAS, at the meeting of the Mohave County Floodplain Commission, held in the Board of Supervisors' Meeting Room in Arnold Plaza, 315 East Oak Street, Kingman, Arizona, on January 27, 1983, there was discussed and evaluated the need for setting of a fee schedule for appeals made to the Mohave County Floodplain Commission and Mohave County Floodplain Board; and

WHEREAS, such provision for fee schedule was not set forth in the AMENDED FLOODPLAIN REGULATIONS FOR THE UNINCORPORATED AREA OF MOHAVE COUNTY, ARIZONA, as adopted by the Mohave County Floodplain Board in Resolution No. 82-1 on the 17th day of May, 1982, and recorded in Book 824 of Official Records, Pages [illegible] and [illegible] and in Book 871 of Official Records, Pages 847 through [illegible]; and

WHEREAS, the Floodplain Commission at their meeting of February 17, 1983, recommended approval of Amendment No. [illegible] to the FLOODPLAIN REGULATIONS and further recommended that the Board of Supervisors [illegible] the fees set forth as follows:

$ 25.00 Fee - for request for variance prior to construction

$150.00 Fee - for request for variance after start of construction

NOW, THEREFORE, BE IT RESOLVED, that the Floodplain Regulations, as [illegible] date have been approved by the Board of Supervisors [illegible] the Floodplain Commission [illegible] February [illegible], 1983.

PASSED, APPROVED AND ADOPTED this 7th day of February, 1983.

MOHAVE COUNTY FLOODPLAIN BOARD

[illegible]

[illegible] Clerk

Recorded in Official Records
of Mohave County, Arizona
FEB 9 1983 [illegible]
Joan McCall, Recorder

5 no chg

1st

BOOK 903 PAGE 100

Fred D. & Carlene Armstrong
2514 Brewerway St.
Arlington, Texas 76010

Form 1340-5
(October 1979)
(Formerly 4-130)

A 18822-F

The United States of America

To all to whom these presents shall come, Greeting:

WHEREAS,

Fred D. Armstrong and Carlene Armstrong

are entitled to a Land Patent pursuant to Sections 203 and 209 of the Federal Land Policy and Management Act of 1976, 90 Stat. 2750, 2757; 43 U.S.C. 1713, 1719 (1982), for the following described land:

Gila and Salt River Meridian, Arizona

T. 21 N., R. 18 W.
Sec. 34, [illegible]

Containing 156.00 acres.

NOW KNOW YE, That there is, therefore, granted by the UNITED STATES unto the above named claimants the land above described; TO HAVE AND TO HOLD the said land with all rights, privileges, immunities, and appurtenances of whatsoever nature thereunto belonging, unto the said claimants, their successors and assigns, forever;

EXCEPTING AND RESERVING TO THE UNITED STATES:

1. A right-of-way thereon for ditches and canals constructed by the authority of the United States, Act of August 30, 1890, 26 Stat. 391; 43 U.S.C. 945.

2. All the oil and gas in the land so patented, and to it or persons authorized by it, the right to prospect for, mine, and remove the same, subject to such conditions as are or may hereafter be provided by such laws reserving such deposits. (30 U.S.C. 121-124)

SUBJECT TO:

1. Such rights for road right-of-way purposes as the Mohave County Board of Supervisors may have under Revised Statute 2477 as to the subject land.

INDEXED DEEDS

Fee # 85-25380 PROOFED

Recorded in Official Records
of Mohave County, Arizona
[illegible]
Joan McCall, Recorder

$5.00 1 of 2

Patent Number 02-85-0041

BOOK 1130 PAGE 726

Form [illegible]
[illegible]

A 16622-F

2. Such restrictions as may be imposed by the County Treasurer [illegible] for the [illegible] of the [illegible] County, Arizona [illegible] Section [illegible] of the [illegible] County, Arizona.

3. All oil and gas leases A-10605 and any extensions thereof.

IN TESTIMONY WHEREOF, the undersigned authorized officer of the Bureau of Land Management, in accordance with the provisions of the Act of June 17, 1948 (62 Stat. 476), has, in the name of the United States, caused these letters to be made Patent, and the seal of the Bureau to be hereunto affixed.

GIVEN under my hand, in PHOENIX, ARIZONA the TWENTY-FIRST day of MARCH in the year of our Lord one thousand nine hundred and EIGHTY-FIVE and of the Independence of the United States the two hundred and NINTH.

OFFICIAL SEAL

By R. Keith Miller
Deputy State Director for Operations

Patent Number 02-85-0041

BOOK 1130 PAGE 721

March 2005
REPORT

REGIONAL HYDROGEOLOGY, SOURCE OF WATER SUPPLY, AND PROJECTED 100-YEAR DRAWDOWN IMPACTS IN THE VICINITY OF THE VILLAGES AT WHITE HILLS MOJAVE COUNTY, ARIZONA

Prepared for:

RHODES HOMES – ARIZONA LLC

Prepared by:

ERROL L. MONTGOMERY & ASSOCIATES, INC.
CONSULTANTS IN HYDROGEOLOGY

7949 EAST ACOMA DRIVE, SUITE 100
SCOTTSDALE, ARIZONA 85260 (480) 948-7747

CONTENTS

Page

SUMMARY AND CONCLUSIONS **1**
INTRODUCTION **6**
DESCRIPTION OF STUDY AREA **8**
HYDROGEOLOGY **9**
PREVIOUS INVESTIGATIONS 9
GEOLOGIC CONDITIONS 10
HYDROGEOLOGIC FEATURES 12
AQUIFER HYDRAULIC PROPERTIES 13
OCCURRENCE AND MOVEMENT OF GROUNDWATER 15
DEPTH TO GROUNDWATER LEVEL 16
EXISTING WELLS AND CURRENT GROUNDWATER PUMPING 16
COMMITTED DEMAND 17
CHANGE IN GROUNDWATER LEVELS 17
GROUNDWATER QUALITY 18
PROJECTED 100-YEAR WATER DEMAND **20**
PROJECTED 100-YEAR IMPACTS FROM GROUNDWATER PUMPING **21**
CONCEPTUAL MODEL 22
PROJECTION OF 100-YEAR GROUNDWATER LEVEL DRAWDOWN **23**
REFERENCES CITED **24**

CONTENTS – continued

TABLES

Table

1 WELL INVENTORY FOR DETRITAL VALLEY, MOHAVE COUNTY, ARIZONA

2 WATER QUALITY DATA ADWR GWSI DATABASE, DETRITAL VALLEY, MOHAVE COUNTY, ARIZONA

3 RESULTS FOR LABORATORY CHEMICAL ANALYSES FOR GROUNDWATER SAMPLES OBTAINED FROM WELLS IN AREA OF THE VILLAGES AT WHITE HILLS, MOHAVE COUNTY, ARIZONA

ILLUSTRATIONS

Figure

1 LOCATION MAP FOR DETRITAL VALLEY

2 GROUNDWATER LEVEL HYDROGRAPH FOR UPPER BASIN-FILL DEPOSITS AQUIFER, DETRITAL VALLEY

3 STIFF DIAGRAMS FOR UPPER BASIN-FILL DEPOSITS AQUIFER, DETRITAL BASIN

4 PROJECTED GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY, AVERAGE ANNUAL DTOTAL PUMPING RATE OF 8,225 ACRE-FEET PER YEAR

5 PROJECTED GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY, AVERAGE ANNUAL DTOTAL PUMPING RATE OF 16,500 ACRE-FEET PER YEAR

CONTENTS – continued

Figure

6 HYDROGRAPH OF GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY

APPENDICES

Appendix

A WELL NUMBERING SYSTEM

B SELECTED WELL RECORDS AND DRILLER'S LOGS FOR DEEP WELLS

C ANALYTICAL MODEL – THWELLS PUMPING RATES, AND PUMPING AND IMAGE WELL LOCATIONS

ERROL L. MONTGOMERY & ASSOCIATES, INC.

March 2005
REPORT

REGIONAL HYDROGEOLOGY, SOURCE OF WATER SUPPLY, AND PROJECTED 100-YEAR DRAWDOWN IMPACTS IN THE VICINITY OF THE VILLAGES AT WHITE HILLS MOJAVE COUNTY, ARIZONA

Prepared for:
RHODES HOMES – ARIZONA LLC

SUMMARY AND CONCLUSIONS

The following summary and conclusions are based on compilation and review of hydrogeologic data for the study area and development and testing of an analytical model. Projections of 100-year impacts from pumping to supply the proposed development at The Villages at White Hills (the "Property") indicate the availability of 16,500 acre-feet per year (af/yr) of adequate quality groundwater.

1. The parcels for the proposed development at The Villages at White Hills are identified herein as the "Property" and are located within the Detrital Valley groundwater basin in Mohave County, Arizona **(Figure 1)**. The Property includes about 2,700 acres east of State Highway 93 and along White Hills Road; the proposed development area includes currently undeveloped desert land, and is located in parts of Sections 16, 20, 21, 23, and 30, Township 27 North, Range 20 West, and part of Section 25, Township 27 North, Range 21

West **(Attachment 2 of Application)**. Title reports demonstrating property ownership are given in **Attachment 4 of the Application**.

2. The Detrital Valley groundwater basin is filled with a sequence of alluvial deposits that overlie fractured granitic, metamorphic, and volcanic bedrock units. These bedrock units form the basal and lateral boundaries of the groundwater basin. The basin-fill sediments comprise a groundwater aquifer; thickness of these sediments ranges from a featheredge at the mountain fronts to possibly more than 6,000 feet in the south part of the basin **(Figure 1)**.

3. Water demands for developments near the Property are small and are supplied chiefly, if not solely, from the upper part of the basin-fill deposits aquifer. These existing demands are not documented, but are considered to be negligible for purposes of this investigation and are from a part of the aquifer that is separated from the target aquifer zone for the Property by several hundred feet of clay and evaporate deposits in the central part of the basin. There are no known current demands on this deep aquifer zone.

4. Well records and drillers logs for several deep wells in the vicinity of the Property are provided in **Table 1** and/or **Appendix B** to demonstrate that depth to bedrock and potential extent of the deep aquifer zone are large in this area. Because most wells in the basin yield groundwater from the shallow aquifer zone, the extent of this zone is well documented across the basin.

5. Groundwater occurs under unconfined conditions throughout the study area in the upper basin-fill deposits aquifer zone. Groundwater enters the study area chiefly as underflow from the south and also as recharge from the

mountain fronts, Detrital Wash, and tributary washes during storm events. The Property is located north from an assumed groundwater divide between the Detrital Valley and Sacramento Valley. Groundwater in the upper basin-fill deposits moves through the system generally from south to north in the Detrital groundwater basin, and from north to south in the Sacramento Valley groundwater basin. The volume of groundwater in storage in the Detrital Valley aquifer system far exceeds the annual volume of recharge and discharge of groundwater in the basin. Groundwater leaves the study area by pumping and as underflow to Lake Mead to the north. Altitude of groundwater level measured in the upper basin-fill deposits was 2,049 feet above mean sea level (feet msl) in June 2003 less than ¼ mile north of the west end of the Property, and was 1,969 feet msl in June 2004 about ¼ mile south of the west end of the Property.

6. Groundwater occurs under confined conditions at the Property in the deeper basin-fill deposits aquifer zone. Direction of groundwater movement in this deeper system is not known, but is assumed to be similar to the direction in the shallower system. Altitude of groundwater level measured in the deeper basin-fill deposits was 2,151 feet msl in March 2005 at the west end of the Property. This level is 100 to 200 feet higher than the groundwater levels measured in nearby wells completed in the upper basin-fill deposits, indicating an upward component of hydraulic gradient from the deeper zone.

7. Historic pumping from wells in the Detrital Valley groundwater basin is not documented, but has occurred chiefly, if not solely, from the upper part of the basin-fill deposits aquifer and is considered to be negligible.

8. Groundwater levels during the last 20 years have not changed significantly. Groundwater levels for wells in the vicinity of the Property generally fluctuated

less than a few feet during the period of record, and do not show a substantial rising or falling trend **(Figure 2)**. Therefore, no regional decline over the 100-year modeling period was added to the model results to simulate regional decline.

9. Few records exist for laboratory chemical analyses of groundwater samples obtained in the Detrital Valley **(Table 2; Figure 3)**. These records are for the upper basin-fill deposits aquifer zone and generally indicate that, near the Property, groundwater in this zone is of good chemical quality with concentrations of total dissolved solids (TDS) in the range from 200 to 400 milligrams per liter (mg/L), slightly alkaline pH, and concentrations of fluoride that do not exceed the maximum contaminant level (MCL) for drinking water defined by the U.S. Environmental Protection Agency (EPA) (U.S. Environmental Protection Agency, 2002). Sparse historic data indicate this groundwater is generally a sodium-bicarbonate water type. Recent data for one well indicates arsenic may exceed the MCL slightly in this upper aquifer zone **(Table 3)**.

   Preliminary partial results of laboratory chemical analyses for a groundwater sample recently obtained from the deeper basin-fill deposits aquifer at The Villages at White Hills indicates a sodium-chloride water type with TDS concentration of 680 mg/L, and slightly alkaline pH **(Table 3)**. This TDS concentration exceeds the secondary standard of 500 mg/L for drinking water (U.S. Environmental Protection Agency, 2002). However, this standard is a guideline only and this chemical characteristic is acceptable and does not affect potability; many human populations drink water with much higher TDS concentration. Complete final results for groundwater sampling from this aquifer zone will be submitted in an addendum when available.

10. Projected water demands were estimated for the proposed Village at White Hills development based on the projected number of residential units and acreages for other land uses identified by Rhodes Homes – Arizona LLC **(Attachment 1 of the Application)**. Types of residential lots include only single family; residential water demands and include interior and exterior uses. Other water demands include: interior and exterior demands for commercial property and schools, and landscaping demands for right-of-ways, easements, and parks. In addition, water demands for construction water and for lost and unaccounted for water were included. The projected total water demand following build out is estimated to be about 15,689 af/yr; the amount simulated in the analytical model to project the potential 100-year drawdown impacts was 16,500 af/yr for conservative analysis. A demand of 8,225 af/yr was also simulated for comparison.

11. Projected 100-year impacts of pumping for water supply for the proposed Villages at White Hills development indicate that less than 831 feet of drawdown will be required to meet the needs of the development, and sufficient groundwater is available to serve the development and meet all requirements of the Arizona Department of Water Resources.

ERROL L. MONTGOMERY & ASSOCIATES, INC.

March 2005
REPORT

REGIONAL HYDROGEOLOGY, SOURCE OF WATER SUPPLY, AND PROJECTED 100-YEAR DRAWDOWN IMPACTS IN THE VICINITY OF THE VILLAGES AT WHITE HILLS MOJAVE COUNTY, ARIZONA

Prepared for:
RHODES HOMES – ARIZONA LLC

INTRODUCTION

In accordance with arrangements with Mr. Jim Rhodes, President, RHODES HOMES – ARIZONA LLC ("Rhodes Homes"), this report documents results of review and analysis of hydrogeologic information for the vicinity of the proposed development identified as The Villages at White Hills. The purpose of this information review and analysis is to evaluate the potential for development of a 100-year groundwater supply to serve the proposed development. An analytical model was constructed to provide projections of groundwater conditions after 100 years of pumping. This report is an integral part of the Application for Analysis of Water Adequacy to be submitted to Arizona Department of Water Resources (ADWR). Scope of this report includes a summary of available hydrogeologic data, calculation of water demands for the development based on projected land-use information provided by Rhodes Homes, development and testing of an analytical

model for the study area, and use of the model to project impacts of groundwater pumping for the 100-year water supply for the proposed development.

DESCRIPTION OF STUDY AREA

The parcels comprising The Villages at White Hills proposed development are identified as the "Property", and are located within the Detrital Valley groundwater basin of Mohave County, Arizona. The Property includes about 2,700 acres east of State Highway 93 and along White Hills Road; as shown on **Figure 1**. Title reports demonstrating property ownership are given in **Attachment 4 of the Application**.

The proposed development area includes currently undeveloped desert land, and is located in parts of Sections 16, 20, 21, 23, and 30, Township 27 North, Range 20 West, and part of Section 25, Township 27 North, Range 21 West. State Highway 93 borders the Property on the west, and White Hills Road northeasterly through the Property. Hydrogeologic conditions are summarized for an area defined by the boundaries groundwater basin as shown on **Figure 1**. This report details water demands and impacts from development of the parcels currently owned by Rhodes Homes.

HYDROGEOLOGY

A literature search was conducted to obtain published reports for the area that contain relevant hydrogeologic information. Sources of hydrogeologic information used for this study include publications and data files of the U.S. Geological Survey (USGS), ADWR, and the Arizona Geological Survey. Data obtained from these sources include: 1) well construction details; 2) reported well pumping rates; 3) groundwater level data; 4) groundwater quality data; 5) lithologic and physical characteristics for geologic units; and 6) aquifer parameters and pumping test data.

PREVIOUS INVESTIGATIONS

Literature reviewed and used for preparation of this summary hydrogeologic report is listed in the References Cited section. Previous investigations by Richard and others (2000) document geology of the mountain ranges that bound the groundwater basin in which the Property lies. Data for hydrogeologic conditions in the Detrital Valley are sparse; conditions must often be inferred and extrapolated from studies conducted for adjacent areas. Reports that provide groundwater basic data and preliminary analyses of the hydrogeologic system in the Property area and adjacent areas include: Dillenburg (1987); Gillespie and Bentley (1971); and Rascona (1991).

GEOLOGIC CONDITIONS

The study area is located in the central part of an elongate structural basin bounded on the east by the north-northwest-trending White Hills and Cerbat Mountains, and on the west by the north-northwest-trending Black Mountains **(Figure 1)**. The groundwater basin is further bounded on the south by a groundwater and surface water divide with Sacramento Valley, and on the north by Lake Mead. The basin is about 50 miles long and 15 miles wide, and comprises an area of about 750 square miles (Dillenburg, 1987). The study area is underlain by Quaternary and Tertiary alluvial sediments that were deposited in the structural basin, which encompasses the main part of Detrital Valley. Extent of the alluvial basin is defined by fault-block mountain ranges, characteristic of the Basin-and-Range physiographic province.

The mountain ranges are composed of uplifted Precambrian metamorphic and igneous rocks that have been intruded by younger igneous rock. The White Hills are comprised of Tertiary volcanic and sedimentary rocks and Early Proterozoic granitic and metamorphic rocks; these mountains are named after the light colored sedimentary rocks (Richard and others, 2000). The Cerbat Mountains are composed primarily of Early Proterozoic granitic rocks with some Early Proterozoic metamorphic rocks (Richard and others, 2000). The Black Mountains are composed primarily of Tertiary volcanic and sedimentary rocks and Early Proterozoic metamorphic rocks (Richard and others, 2000). The mountain ranges and alluvial basin are associated with high-angle faulting that occurred between 15 and 6 million years ago (Anderson and others, 1992).

The Detrital Valley groundwater basin is filled with a sequence of alluvial deposits of Late Tertiary to Quaternary age that overlies fractured granitic, metamorphic, and volcanic bedrock units. These bedrock units form the basal and

lateral boundaries of the basin. The basin-fill alluvial deposits comprise the principal groundwater aquifer; thickness of these deposits ranges from a featheredge at the mountain fronts to possibly more than 6,000 feet in the south part of the basin. Depth to bedrock contours, as defined by Oppenheimer and Sumner (1980), are shown for the south part of the basin on **Figure 1**.

The alluvial basin-fill deposits in the vicinity of the Property comprise a sequence of younger alluvium and older alluvium, and are believed to be similar to descriptions of alluvial deposits given by Gillespie and Bentley (1971) for the Sacramento Valley. Descriptions of other alluvial units that occur in the far north end of the Detrital Valley are given by Laney (1979); however, these units have not been described in the Property area and are not discussed here.

The younger alluvium covers extensive areas of the Detrital Valley and is Holocene and Pleistocene in Age (Richard and others, 2000). Where penetrated by wells in the Property area, this unit consists chiefly of sand and gravel with some silt and clay. Thickness of the unit reaches more than 500 feet in the Property area. The lower part of the unit lies below groundwater table and provides several tens of gallons per minute (gpm) to wells. The mineralogy and rock type of the sands and gravels are representative of the source rocks in the surrounding mountains that have shed into the basin by erosive processes.

Deposits are classified as older alluvium in this report based on similar characteristics described by Gillespie and Bentley (1971) for the Sacramento Valley. The older alluvium underlies the younger alluvium and, where encountered in deep wells in the Property area, consists of a sequence of more than 800 feet of alternating clays and claystones, with beds of gypsum. At two wells in the Property area, this thick sequence of clays and gypsum has been penetrated and a well cemented conglomerate has been encountered. Composition of the conglomerate

reflects the nearby source areas in the surrounding mountains. This conglomerate comprises a previously untapped, deep basin-fill deposits aquifer zone that is capable of yielding large quantities of adequate quality groundwater to wells. Thickness of the conglomerate at well B(27-21)25ADC **(Table 1)**, located on the Property, is more than 640 feet to a depth of 2,008 feet; base of the conglomerate was not encountered. These results, together with well records given in **Appendix B** for selected deep wells in the Property area, demonstrate that depth to bedrock is large and the deep aquifer zone is extensive in this part of the basin. These drillers logs support the conclusion that the conglomerate extends from as far east as wells B(28-19)29DCC and B(28-19)31AAA to well B(27-21)25ADC. This distance is nearly 10 miles across the Detrital Valley and traverses the entire length of the Property.

HYDROGEOLOGIC FEATURES

The groundwater aquifer in the study area is composed chiefly of alluvial sediments of Tertiary (older alluvium) to Holocene (younger alluvium) geologic age. The younger alluvium is interpreted to have been deposited primarily by mountain-front outwash eroded from the consolidated rock that forms the basin-bounding mountain ranges. The older alluvium is composed of a thick sequence of clays and claystone underlain by a thick conglomerate unit. The older alluvium is believed to have excellent water-bearing characteristics throughout a substantial part of the basin and wells completed in this unit are expected to yield large quantities of groundwater.

Outcrops of granitic, metamorphic, and volcanic rocks occur along the east and west boundaries of the alluvial basin. These boundaries and inferred

associated geologic structures are interpreted to represent poorly permeable barriers to groundwater movement, and the physical limit to extent of water-yielding material in the basin. Rocks of the basin-bounding mountain ranges may yield a few gallons per minute of groundwater to wells, but only where the unit is saturated and extensively fractured.

AQUIFER HYDRAULIC PROPERTIES

Important aquifer hydraulic properties that control rate of groundwater movement and amount of groundwater storage in the aquifer include transmissivity, hydraulic conductivity, and specific yield or storage coefficient. Transmissivity is defined as the rate of groundwater movement, under a 1:1 hydraulic gradient through a vertical section of an aquifer 1 foot wide and extending the full saturated thickness of the aquifer (Theis, 1935). Units for transmissivity are gallons per day per foot width of aquifer (gpd/ft). Transmissivity is a measure of the ability of an aquifer to transmit groundwater and is equal to the product of hydraulic conductivity and saturated thickness of the aquifer. Hydraulic conductivity is defined as the rate of groundwater movement, under a 1:1 hydraulic gradient, through a unit area of aquifer material (Heath, 1989). Hydraulic conductivity has units of gallons per day per square foot (gpd/ft^2). Hydraulic conductivity is also commonly expressed in units of feet per day (ft/day), which is gpd/ft^2 divided by 7.48 gallons per cubic foot. Specific yield is defined as the volume of water that would drain from a unit volume of aquifer material and is dimensionless; this term is applied to unconfined aquifers. Storage coefficient is defined as the volume of water released from storage in a unit prism of an aquifer when the hydraulic head is lowered a unit distance; this term is applied to confined aquifers (Heath, 1989).

A search of ADWR records yielded no pumping test information for wells in the Detrital Valley groundwater basin. However, data are available for wells that were tested in the northern part of the Sacramento Valley, which shares a groundwater divide boundary Detrital Valley. Construction details for wells in the ADWR well records for Detrital Valley are summarized in **Table 1**. The well-numbering system used in this report is described in **Appendix A**.

TRANSMISSIVITY DETERMINED FROM AQUIFER TESTS IN THE NORTH PART OF SACRAMENTO VALLEY

WELL IDENTIFIER	WELL NAME	TEST DATE	REPORTED TRANSMISSIVITY (gpd/ft)	AVERAGE HYDRAULIC CONDUCTIVITY (gpd/ft^2)	REFERENCE
B(20-18)4 BBA	MP-5	Pre-1971	46,000	70	Gillespie and Bentley (1971)
B(21-18)32 DCC	MP-1	Pre-1971	35,000	70	Gillespie and Bentley (1971)

These wells are completed in the older alluvium. Due to similar basin characteristics and source rocks for the older alluvium in the Detrital and Sacramento Valleys, the average hydraulic conductivity reported for these aquifer tests were used for projecting impacts from proposed pumping for the Property. A pumping test will soon be conducted for well B(27-21)25ADC and results will be used to submit an addendum to the Application for Analysis of Water Adequacy for the Property.

For modeling purposes for The Villages at White Hills, an average saturated thickness of 600 feet was used for the older alluvium aquifer, based on results from drilling well B(27-21)25ADC. Therefore, assumed aquifer transmissivity for the model was the product of 600 feet times 70 gpd/ft^2, which provides a transmissivity of 42,000 gpd/ft. Because the deep basin-fill alluvial aquifer is confined, a storage coefficient of 0.001 was used for the model.

OCCURRENCE AND MOVEMENT OF GROUNDWATER

Groundwater occurs under unconfined conditions throughout the study area in the upper basin-fill alluvial deposits aquifer zone. Groundwater enters the study area chiefly as underflow from the south and also as recharge from the mountain fronts, Detrital Wash, and tributary washes during storm events (Dillenburg, 1987). The Property is located north from an assumed groundwater divide between the Detrital Valley and Sacramento Valley. Groundwater in the upper basin-fill alluvial deposits moves through the system generally from south to north in the Detrital groundwater basin, and from north to south in the Sacramento Valley groundwater basin (Dillenburg, 1987; Rascona, 1991). The volume of groundwater in storage in the Detrital Valley aquifer system far exceeds the annual volume of recharge and discharge of groundwater in the basin. Groundwater leaves the study area by pumping and as underflow to Lake Mead to the north. Altitude of groundwater level measured in the upper basin-fill alluvial deposits aquifer zone was 2,049 feet above mean sea level (feet msl) in June 2003 at well B(27-20)31ADC, located less than ¼ mile north of the west end of the Property, and was 1,969 feet msl in June 2004 at well B(27-21)25ACA, located about ¼ mile south of the west end of the Property **(Table 1)**.

Groundwater occurs under confined conditions at the Property in the deeper basin-fill alluvial deposits aquifer zone. Direction of groundwater movement in this deeper system is not known, but is assumed to be similar to the direction in the shallower system. Altitude of groundwater level measured in the deeper basin-fill deposits aquifer zone was 2,151 feet msl in March 2005 at well B(27-21)25ADC, located at the west end of the Property. This level is 100 to 200 feet higher than the groundwater levels measured in nearby wells completed in the upper basin-fill

alluvial deposits, indicating an upward component of hydraulic gradient from the deeper zone.

DEPTH TO GROUNDWATER LEVEL

Depth to groundwater in the upper basin-fill alluvial deposits aquifer zone ranged from about 780 feet below land surface in the south part of the Detrital Valley groundwater basin, to 20 feet below land surface in the northern part of the basin (Dillenburg, 1987). Depth to groundwater in this aquifer zone in the Property area was 460 feet in June 2003 at well B(27-20)31ADC, and was 461 feet in June 2004 at well B(27-21)25ACA **(Table 1)**.

Depth to groundwater in the deeper basin-fill alluvial deposits aquifer zone in the Property area was 286 feet below land surface in March 2005 at well B(27-21)25ADC, and was 289 feet in March 2005 at well B(27-21)25ACA after it was deepened **(Table 1)**.

EXISTING WELLS AND CURRENT GROUNDWATER PUMPING

Records for 203 wells within the study area were compiled from the ADWR "55" well registry, the ADWR "35" well registry, and Groundwater Site Inventory databases, and are summarized in **Table 1**. Wells within the study area are shown on **Figure 1**.

Reported pumping rates for wells in the Property area range from 2 to 90 gpm **(Table 1)**. Historic pumping from wells in the Detrital Valley groundwater basin is not documented, but has occurred chiefly, if not solely, from the upper part of the basin-fill alluvial deposits aquifer and is considered to be negligible.

COMMITTED DEMAND

Water demands for developments near the Property are small and are supplied chiefly, if not solely, from the upper part of the basin-fill deposits aquifer. These existing demands are not documented, but are considered to be negligible for purposes of this investigation and are from a part of the aquifer that is separated from the target aquifer zone for the Property by several hundred feet of clay and evaporate deposits in the central part of the basin. There are no known current demands on this deep aquifer zone.

CHANGE IN GROUNDWATER LEVELS

Hydrograph of groundwater level altitude for selected wells in the vicinity of the Property are shown on **Figure 2**. Groundwater levels during the last 20 years have not changed significantly. Groundwater levels for wells in the vicinity of the Property generally fluctuated less than a few feet during the period of record, and do not show a substantial rising or falling trend **(Figure 2)**. Therefore, no regional decline over the 100-year modeling period was added to the model results to simulate regional decline.

GROUNDWATER QUALITY

Few historical or current records exist for laboratory chemical analyses of groundwater samples obtained in the Detrital Valley. Water quality data obatained from ADWR records are summarized in **Table 2**. Stiff diagrams for four wells in the basin reported by Dillenburg (1987) are shown on **Figure 3**. These records are for the upper basin-fill alluvial deposits aquifer zone and generally indicate that, near the Property, groundwater in this zone is of good chemical quality with concentrations of total dissolved solids (TDS) in the range from 200 to 400 milligrams per liter (mg/L), slightly alkaline pH, and concentrations of fluoride that do not exceed the maximum contaminant level (MCL) for drinking water defined by the U.S. Environmental Protection Agency (EPA) (U.S. Environmental Protection Agency, 2002). Sparse historic data indicate this groundwater is generally a sodium-bicarbonate water type. Results for laboratory chemical analyses recently obtained from wells B(27-21)25ADC and B(27-21)25BAA are summarized in **Table 3**. Recent data for well B(27-21)25BAA indicates arsenic may exceed the MCL slightly in this upper aquifer zone.

Preliminary partial results of laboratory chemical analyses for a groundwater sample recently obtained from the deeper basin-fill alluvial deposits aquifer zone at The Villages at White Hills indicates a sodium chloride water type with TDS concentration of 680 mg/L, and slightly alkaline pH **(Table 3)**. This TDS concentration exceeds the secondary standard of 500 mg/L for drinking water (U.S. Environmental Protection Agency, 2002). However, this standard is a guideline only and this chemical characteristic is acceptable and does not affect potability; many human populations drink water with much higher TDS concentration. Complete final results for groundwater sampling from this aquifer zone will be submitted in an addendum when available.

A search of Internet on-line data files for locations of WQARF and Superfund sites designated by the Arizona Department of Environmental Quality did not indicate the presence of contaminant sites in the study area.

PROJECTED 100-YEAR WATER DEMAND

Projected water demands were estimated for the proposed development based on the projected number of residential units and acreages for other land uses identified by Rhodes Homes. Types of residential lots include only single family; residential water demands and include interior and exterior uses. Other water demands include: interior and exterior demands for commercial property and schools, and landscaping demands for right-of-ways, easements, and parks. In addition, water demands for construction water and for lost and unaccounted for water were included. The projected total water demand following build out is estimated to be about 15,689 af/yr. Details for the basis of the estimated water demand are included in the Application for an Analysis of Adequate Water Supply.

PROJECTED 100-YEAR IMPACTS FROM GROUNDWATER PUMPING

Projections of 100-year drawdown resulting from estimated groundwater pumping for water supply at the Property were made using the computer software "THWELLS" (van der Heijde, 1996). This software solves the Theis equation to compute drawdown for up to 100 wells and uses spatially uniform values for aquifer parameters. A correction to the Theis equation was applied for simulation of confined aquifer conditions. Data used in the THWELLS model are discussed below and are summarized in tabular form in **Appendix C**. Included in **Appendix C** is **Tables C-1 and C-2**, which summarize the "x" and "y" model coordinates for pumping and image wells, and the pumping rate simulated at each well location. Locations for wells included in the simulation are shown on **Figures 4 and 5**; the well locations represent sites for pumping wells in the target aquifer system and sites for image wells representing the assumed barrier boundaries

Model transmissivity was assigned a value of 42,000 gpd/ft to represent an average value for the study area for the 100-year projection. The 42,000 gpd/ft value is consistent with aquifer thickness in the Detrital Valley and reported hydraulic conductivity for the older alluvial deposits in the Sacramento Valley.

None of the wells in the vicinity of the proposed development were not drilled sufficiently deep to encounter bedrock. However, depth to bedrock has been shown to exceed 2000 feet below land surface in the Property area.

Depth to water in the deep aquifer zone at the Property is about 280 feet **(Figure 2)**. Therefore, the entire target aquifer zone is saturated, from about 1,400 to 2,000 feet below land surface at the Property. For purposes of modeling, a value of 600 feet of saturated thickness was used to represent the aquifer at the Property.

This value is considered to be conservatively small, and the actual saturated thickness from which wells could draw water is believed to be much larger.

CONCEPTUAL MODEL

The hydrologic features and pumping regimens for the conceptual groundwater model are summarized as follows:

- Barrier boundaries were assumed to be located east and west from Property, representing bedrock of the White Hills, Cerbat Mountains, and Black Mountains. These boundary define a close polygon (triangle) encompassing the Property area. Locations for the barrier boundaries are shown on **Figures 4 and 5**.

- Image wells were simulated on the opposite side of each barrier boundaries.

- Saturated thickness of the aquifer is assumed to be 600 feet.

- Aquifer parameters: Transmissivity (T) = 42,000 gpd/ft
  Storage Coefficient (S) = 0.001

- Six pumping wells were simulated on the Property; each well was assigned a continuous pumping rate of about 850 gpm for a total demand of 8,225 af/yr and about 1,700 gpm for a total demand of 16,500 af/yr **(Figures 4 and 5; Tables C-1 and C-2 in Appendix C).**

- 18 image wells were simulated in the model, and were each assigned a pumping rates of about 850 and 1,700 gpm to represent production pumping effects **(Figures 4 and 5; Tables C-1 and C-2 in Appendix C).**

- Total simulation time = 100 years

- Existing well pumpage was not simulated in the model.

PROJECTION OF 100-YEAR GROUNDWATER LEVEL DRAWDOWN

Results of model projections for a 100-year pumping period are summarized as follows:

- A simulation was conducted to project groundwater level drawdown for 100 years of pumping. Recharge was not included in the model projection.
- Simulations were conducted for a 100-year period. Pumping rates were based on projected future pumping rates.
- Maximum groundwater level drawdown from all sources of pumping is about 831 feet at Pumping Well 4 **(Table C-2)**.
- A hydrograph of projected groundwater level drawdown for the 100-year pumping period at the point of maximum drawdown in the wellfield is shown on **Figure 6**.
- Projected 100-year impacts of pumping for water supply for the proposed development indicate that less than 831 feet of drawdown will be required to meet the needs of the development, and sufficient groundwater is available to serve the development and meet all ADWR requirements.

REFERENCES CITED

Anderson, T.W., Freethey, G.W., and Tucci, P., 1992, **Geohydrology and water resources of alluvial basins in south-central Arizona and parts of adjacent States:** U.S. Geological Survey Professional Paper 1406-B, 67 p.

Dillenburg, R.A., 1987, **Maps showing groundwater conditions in the Detrital Wash Basin, Mohave County, Arizona –1987:** Arizona Department of Water Resources Hydrologic Map Series Report Number 14, scale 1:125,000, June 1987.

Gillespie, J.B., and Bentley, C.B., 1971, **Geohydrology of Hualapai and Sacramento Valleys, Mohave County, Arizona:** U.S. Geological Survey Water Supply Paper 1899-H, 1971.

Heath, R., 1989, **Basic ground-water hydrology**: U. S. Geological Survey Water Supply Paper 2220, 84 p.

Oppenheimer, J.M., and Sumner, J.S., 1980, **Regional geophysics assessment of Southwest Alluvial Basins:** University of Arizona, final report for U.S. Geological Survey contract no. 14-08-0001-18228, 50 p.

Rascona, S.J., 1991, **Map showing groundwater conditions in the Sacramento Valley Basin, Mohave County, Arizona – 1991:** Arizona Department of Water Resources Hydrologic Map Series Report Number 21, scale 1:125,000, June 1991.

Richard, S.M., 2004, **Digital spatial data for the Geologic Map of Arizona:** Arizona Geological Survey Digital Information Series 08, Version 3.0.

Richard, S.M., Reynolds, S.I., Spencer, J.E., and Pearthree, P.A., 2000, **Geologic Map of Arizona:** Arizona Geological Survey Map 35, scale 1:1,000,000

Theis, C.V., 1935, **The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage:** American Geophysical Union Transactions, vol. 16, pp. 519-524.

U.S. Environmental Protection Agency, July 2002, **List of contaminants & their Maximum Contaminant Level (MCLs):** U.S. Environmental Protection Agency, Office of Ground Water and Drinking Water, Washington, DC.

van der Heijde, P.K.M., 1996, **THWELLS, Flow in an** (sic) **confined, leaky confined or unconfined aquifer with regional uniform flow and multiple wells:** International Ground Water Modeling Center, Golden, Colorado, 83 p.

Wilson, R.P., and Owen-Joyce, S.J., 1994, **Method to identify wells that yield water that will be replaced by Colorado River water in Arizona, California, Nevada, and Utah:** United States Geological Survey Water-Resources Investigations Report 94-4005, Plates 5 and 7.

CONTENTS

TABLES

1 WELL INVENTORY FOR DETRITAL VALLEY, MOHAVE COUNTY, ARIZONA

2 WATER QUALITY DATA ADWR GWSI DATABASE, DETRITAL VALLEY, MOHAVE COUNTY, ARIZONA

3 RESULTS FOR LABORATORY CHEMICAL ANALYSES FOR GROUNDWATER SAMPLES OBTAINED FROM WELLS IN AREA OF THE VILLAGES AT WHITE HILLS, MOHAVE COUNTY, ARIZONA

TABLE 1. WELL INVENTORY FOR DETRITAL VALLEY
MOHAVE COUNTY, ARIZONA

ADWR 55-WELL REGISTRY NUMBER	WELL IDENTIFIER	SOURCE	ADWR INDEX WELL	UTM COORDINATES (NAD 27) Easting (meters)	UTM COORDINATES (NAD 27) Northing (meters)	DATE COMPLETED	WELL DEPTH (feet, bls)	CASING DEPTH (feet, bls)	CASING DIAMETER (inches)	CASING PERFORATED INTERVAL (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL DATE	WATER LEVEL DEPTH (feet, bls)	WATER LEVEL ALTITUDE (feet, msl)	WELL / WATER USE	LOG TYPE	REPORTED PUMPING RATE (gpm)	REPORTED TESTING RATE (gpm)	OWNER
647052	(B-23-18) 06	55		205,331.50	3,923,334.30	1/1/1965	300	200	8				150.00				5	5	MABERRY, J L
647053	(B-23-18) 06	55		205,331.50	3,923,334.30	1/1/1964	180	90	8				100.00		H		3	3	JOYCE D MABERRY
582737	(B-23-18) 06 ACA	55		205,638.70	3,923,630.30	8/16/2000	355	355	5				-		H	X	5	9	CHRISTOPHER BROWN
505451	(B-23-18) 07 BCB	55		204,595.20	3,922,034.10	6/22/1983	625	-	0				-		H A	X	-	-	TENNISON, L
517160	(B-23-19) 07 CCA	55		195,189.60	3,921,484.90		-	-	0				-		None ME		-	-	GALLI EXPLORATION
517159	(B-23-19) 18	55		195,655.30	3,920,367.10	1/22/1988	300	-	6				-		None ME A	X	-	-	GALLI EXPLORATION
520236	(B-23-19) 18 BCA	55		195,161.90	3,920,683.40	1/25/1988	200	-	0				-		None ME A	X	-	-	GEXA GOLD CORP
536684	(B-23-20) 01 DAC	55		194,640.50	3,923,226.10		-	-	0				-		O Pr S		-	-	HAMILTON, BILL TRUST
625762	(B-23-20) 11 CBA	55		191,977.30	3,921,907.60	1/1/1959	800	500	6				300.00		H S		20	20	MAC EWEN,W
651173	(B-24-18) 08 CCA	55		206,750.00	3,930,799.00		110	90	2				60.00		H S		20	20	HAMILTON, C
642320	(B-24-18) 30 CCD	GWSI		205,020.58	3,925,753.06						3,805	7/5/1984	24.80	3,780.20	U				
642320	(B-24-18) 30 CCD	55		204,937.30	3,925,810.00	1/1/1972	-	-	0				-		S		-	-	BLM-PHOENIX DISTRICT
534238	(B-24-18) 30 CDC	55		205,144.70	3,925,804.60	3/4/1992	830	831	24				80.00		P	X	-	-	CHORIDE WATER CORP
534183	(B-24-18) 30 CDC	55		205,144.70	3,925,804.60	2/8/1992	955	925	6				80.00		P	X	-	-	CHLORIDE WATER CORP
[illegible]	(B-24-19) 02 ECA	GWSI		202,696.87	3,932,587.41						3,530				S				HAMILTON
651159	(B-24-19) 02 DCB	55		202,529.90	3,932,524.60		110	110	2				70.00		H S		2	2	HAMILTON, C W
204715	(B-24-19) 03 ABB	55		200,949.60	3,933,513.20		1,000	1,000	5				490.00		S	X	-	-	CHARLES W HAMILTON IRREVO
543512	(B-24-19) 05 BBB	55		196,929.00	3,933,646.40		-	-	0				-		H		-	-	REDMOND, JENAI, P
557970	(B-24-19) 05 CCC	55		196,881.00	3,932,565.70	6/18/1996	950	950	7				840.00		H	X	7	7	TURNER, MIKE
547733	(B-24-19) 07 AAD	55		196,671.00	3,932,193.80	2/2/1995	925	925	7				860.00		H	X	10	10	MEEMAR, FEREIDON
205285	(B-24-19) 07 DDA	55		196,640.70	3,931,188.90		-	-	0				-		H		7	7	HERBERT W MASON JR
[illegible]	(B-24-19) 08 AAD	GWSI		198,389.57	3,932,083.65		30	30			3,150	7/4/1984			U				
641575	(B-24-19) 22 D	55		201,066.30	3,927,910.10	7/29/1969	435	410	8				250.00		Capped		6	6	BECK ET AL, P
547203	(B-24-20) 13 BDD	55		194,271.50	3,930,086.20	11/16/1995	305	-	7				-		H	X	-	-	SMITH, GARY, C
582148	(B-24-20) 19 BBC	55		185,619.80	3,929,181.60	7/28/2000	1,205	20	5				-		H	X	-	-	RICHARD & BREND VECELLIO
568905	(B-24-20) 23 ABA	55		193,025.80	3,929,120.40		-	-	0				-		H		-	-	CHARLIE MANOR
593671	(B-24-20) 23 ABA	55		193,025.80	3,929,120.40		970	970	5				840.00		H	X	-	-	CHARLIE MANOR
537890	(B-24-20) 23 BDD	55		192,603.60	3,928,530.80	5/12/1993	988	988	6				850.00		H	X	5	10	SHELLY, LORENZO
533839	(B-24-20) 29 CCC	55		187,088.90	3,926,309.40		-	-	0				-		H		-	-	SOLOMON, NORMAN, J
543684	(B-24-20) 33 ABD	55		189,691.50	3,925,812.10		-	-	0				-		H		-	-	MCGOWAN, TARA, L
584485	(B-24-20) 33 BAD	55		189,289.00	3,925,826.50	7/30/2001	1,280	1,270	5				1,240.00		H	X	-	-	CAROLINE KING
606684	(B-25-18) 16 BB	55		208,331.50	3,939,588.30		-	-	0				-		S		-	-	DESERT EMPIRE INC
[illegible]	(B-25-18) 17 BC	GWSI		206,767.80	3,939,083.57						3,800				S				
[illegible]	(B-25-19) 01 CCC	GWSI		203,080.52	3,943,278.20						3,700				U				
[illegible]	(B-25-19) 01 BAD	TWSI		203,577.62	3,943,078.90		600	600			3,430				P				MOUNT TIPTON WATER CO
606511	(B-25-19) 01 B	55		203,805.70	3,942,763.10	2/25/1972	600	600	8				412.00		H		72	72	MT TIPTON WATER CO
801613	(B-25-19) 01 BAD	55		204,110.80	3,942,853.10	2/15/1968	520	-	8				-		H		640	640	ECKLES ETAL, J E
508835	(B-25-19) 01 BBC	GWSI		203,388.90	3,942,884.68		700	700			3,970				P				TIPTON WATER CO
508835	(B-25-19) 01 BBC	55		203,506.70	3,942,873.90	10/4/1984	700	700	8				399.00		H	X	57	57	MT TIPTON WATER CO
540280	(B-25-19) 01 CCC	55		203,473.80	3,941,660.40	11/21/1993	1,200	-	0				540.00		B H	X	-	-	MT TIPTON WATER CO
601641	(B-25-19) 03 CCC	GWSI		200,254.55	3,941,777.00		715	715			3,122	4/20/1957	601.30	2,521.00	U				HARRY BATES
601641	(B-25-19) 03 CCC	55		200,259.10	3,941,775.90	5/1/1978	715	715	6				590.00		H		15	15	BATES, H L
561143	(B-25-19) 09 ACD	55		199,628.10	3,940,991.90	4/8/1997	875	875	7				760.00		H S	X	7	6	PARKER, DANIEL
204304	(B-25-19) 09 ADC	55		199,827.90	3,940,984.80	8/19/2004	930	930	5				760.00		H	X	7	7	ALLEN E & EVELY TOBIN TRUSTEES
503892	(B-25-19) 09 BC	55		198,731.90	3,941,124.80	10/26/1982	750	750	6				665.00		H	X	-	-	LONG, J
581711	(B-25-19) 09 BDD	55		199,228.50	3,941,006.10	7/20/2000	865	865	5				750.00		H	X	-	-	JIM & PEGGY HAMM
[illegible]	(B-25-19) 11 CBD	GWSI		201,949.93	3,940,450.05		700	700			3,280				H				MARJORIE KNOX
583133	(B-25-19) 17 BDA	55		197,579.80	3,939,651.90		-	-	0				-				-	-	PAUL ALLEN
571507	(B-25-19) 17 BDA	55		197,579.80	3,939,651.90		-	-	0				-		H		-	-	PAUL ALLEN
579319	(B-25-19) 17 BDA	55		197,579.80	3,939,651.90	3/30/2000	860	860	5				750.00		H	X	-	-	PAUL ALLEN
200166	(B-25-19) 17 BDD	55		197,572.40	3,939,451.80	10/21/2003	810	810	5				743.00		H	X	-	5	KENNETH BARKER
585823	(B-25-19) 17 CBA	55		197,164.40	3,939,265.80	4/2/2001	905	890	5				860.00		H	X	5	5	DANIEL C SANCHEZ
612456	(B-25-19) 17 CDD	GWSI		197,600.31	3,938,590.64		840	840			3,020	11/7/1995	775.00	2,245.00	U				ROBERT MC KELLER
612456	(B-25-19) 17 CDD	55		197,542.90	3,938,650.90	5/31/1967	800	800	10				725.00		H		15	15	SHERRIE DOTSON
598885	(B-25-19) 18 CDD	55		195,936.20	3,938,703.80		-	-	0				-		C S		-	-	ARIZONA ACREAGE LLC
598886	(B-25-19) 18 CDD	55		195,936.20	3,938,703.80		-	-	0				-		C S		-	-	ARIZONA ACREAGE LLC
582738	(B-25-19) 19 DCA	55		196,289.50	3,937,273.70	2/28/2001	908	908	5				737.00		H	X	-	-	RICHARD GILLESPIE

ERROL L. MONTGOMERY & ASSOCIATES, INC.

TABLE 1. WELL INVENTORY FOR DETRITAL VALLEY
MOHAVE COUNTY, ARIZONA

ADWR 55-WELL REGISTRY NUMBER	WELL IDENTIFIER	SOURCE	ADWR INDEX WELL	UTM COORDINATES (NAD 27) Easting (meters)	UTM COORDINATES (NAD 27) Northing (meters)	DATE COMPLETED	WELL DEPTH (feet, bls)	CASING DEPTH (feet, bls)	CASING DIAMETER (inches)	CASING PERFORATED INTERVAL (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL DATE	WATER LEVEL DEPTH (feet, bls)	WATER LEVEL ALTITUDE (feet, msl)	WELL / WATER USE	LOG TYPE	REPORTED PUMPING RATE (gpm)	REPORTED TESTING RATE (gpm)	OWNER
510179	(B-25-19) 20 ACB	GWSI		197,659.18	3,938,094.90		900	900			3,025				H				DON AND MEL CHAMBERS
510178	(B-25-19) 20 ACB	GWSI		197,659.18	3,938,094.90		900	900			3,025				H				MT TIPTON WATER CO
510178	(B-25-19) 20 ACB	55		197,721.30	3,938,036.00	4/20/1985	900	900	8				780.00		H	X	-	-	CHAMBERS, D
584112	(B-25-19) 20 BAD	55		197,527.30	3,938,245.60		-	-	0				-		H		-	-	DOUGLAS GARDNER
547025	(B-25-19) 20 BCA	55		197,119.90	3,938,057.30		-	-	0				-		H R		-	-	SPACE UNIVERSAL LIFE
544995	(B-25-19) 21 BAA	55		199,138.20	3,938,390.90	7/21/1994	660	-	0				-		C B A	X	-	-	MT TIPTON WATER CO
553126	(B-25-19) 23 BBB	55		201,753.50	3,938,296.60	1/10/1996	830	-	7				780.00		H	X	-	-	JAIME, FREDRICK, G
503756	(B-25-19) 25 AAA	55		204,710.50	3,936,582.80	11/13/1982	580	580	7				480.00		H	X	10	10	DISMUKES, EFFIE
204589	(B-25-19) 29 CAA	55		197,452.20	3,936,026.10		-	-	0				-		H		-	-	ANTHONY JOSEPH SY
650952	(B-25-19) 30 AAA	GWSI		196,710.32	3,936,892.72		955	955			3,000	4/20/1987	772.40	2,227.60	H				E WINDOLPH
650952	(B-25-19) 30 AAA	GWSI		196,710.32	3,936,892.72		955	955			3,000	4/20/1987	772.40	2,227.60	U				SEUNG HWAN HAN
650952	(B-25-19) 30 AAA	55		196,677.00	3,936,856.30	4/3/1966	955	926	6				800.00		H	X	35	60	HAN, SEUNG HWAN
805963	(B-25-19) 30 BBA	GWSI		195,190.53	3,936,910.69		825	825			2,950	11/7/1995	711.90	2,238.10	U				LEONARD BILLMANN
805963	(B-25-19) 30 BBA	GWSI		195,190.53	3,936,910.69		825	825			2,950	11/7/1995	711.90	2,238.10	U				MOHAMMED AL MAD
805963	(B-25-19) 30 BBA	55		195,471.00	3,936,892.40	5/23/1966	825	-	8				735.00		I		95	-	AHMAD, MOHAMMED, I
637115	(B-25-19) 31 AAA	GWSI		196,604.44	3,935,260.79		880	880			3,015	11/7/1995	783.00	2,232.00	U				RON DOLE
637115	(B-25-19) 31 AAA	55		196,624.30	3,935,249.90	11/26/1973	880	880	8				790.00		H		10	10	MCDONALD, W B
585883	(B-25-19) 31 ACD	55		196,203.60	3,934,658.40	3/13/2001	905	890	5				860.00			X	5	10	GARY W SIEGFRIED
573031	(B-25-19) 31 BBC	55		195,210.60	3,935,094.40	3/20/1999	860	860	5				760.00		H	X	10	10	VIRGIL R DARLING
598887	(B-25-20) 03 BAB	55		191,057.40	3,943,508.90		-	-	0				-		C S		-	-	GATEWAY LOTS LLC
555088	(B-25-20) 09 DCD	55		189,946.00	3,940,521.80	4/19/1996	945	938	10				750.00		H S	X	-	-	GATEWAY ACRES INC
589507	(B-25-20) 10 CBC	55		190,564.70	3,940,905.70	11/13/2001	780	780	5				670.00		H	X	12	12	RAYMOND GREGORY
552355	(B-25-20) 10 CDC	55		190,954.80	3,940,487.80	12/25/1995	770	770	7				670.00		I H	X	12	12	ADAMS, STUART
201083	(B-25-20) 11 ABA	55		193,206.90	3,941,816.20		802	802	7				576.00		I H	X	-	-	JEFFERY L WHEELER
645459	(B-25-20) 11 CDC	GWSI		192,439.61	3,940,840.90		800	800			2,807	11/7/1995	565.80	2,241.00	U				GATEWAY ACRES
645459	(B-25-20) 11 CDC	55		192,561.20	3,940,430.80	12/31/1965	800	800	8				576.00		H		-	-	GATEWAY ACRES
637011	(B-25-20) 11 DD	55		193,463.40	3,940,499.10	1/1/1930	20	-	0				10.00		S		2	2	
621782	(B-25-20) 15 AAA	55		191,952.80	3,940,250.60		-	-	0				-		H S		-	-	ARIZONA ACREAGE LLC
637009	(B-25-20) 15 AAA	55		191,952.80	3,940,250.60	10/15/1948	650	650	8				500.00		S		20	20	ARIZONA ACREAGE LLC
	(B-25-20) 15 AAA	GWSI	YES	191,959.06	3,940,326.59		700	700			2,814	10/21/2003	596.80	2,217.20	S				E SMITH
085450	(B-25-20) 15 CDD	55		191,098.80	3,938,869.00	12/1/1980	730	730	6				630.00		H		10	10	DE COOPMAN, L
637010	(B-25-20) 31 BB	55		185,645.20	3,935,530.90	1/1/1960	120	20	8				80.00		S		2	2	TWIN LAKES RANCHES
553101	(B-25-20) 33 BDB	55		189,148.60	3,935,107.70	12/4/1995	800	20	7				-		H	X	-	-	LEWIS, DELBERT,L
540938	(B-25-20) 35 CCB	GWSI		191,957.36	3,934,125.72		950	950			3,002				U				ERNEST L REED
540938	(B-25-20) 35 CCB	55		191,957.40	3,934,205.10	11/29/1993	950	20	7				-		H	X	-	-	REED, ERNEST, L
621800	(B-25-21) 35 ACD	GWSI		183,543.45	3,934,972.97						2,680	11/9/1995	126.00	2,554.00	S				E L SMITH
621800	(B-25-21) 35 ACD	55		183,322.20	3,935,108.50		-	-	0				-		S		-	-	SMITH, E L
601846	(B-26-19) 35 DDA	GWSI		203,541.66	3,943,348.55		480	465			3,858	11/9/1995	177.00		P				DOLAN SPRINGS WATER CO
601846	(B-26-19) 35 DDA	55		203,326.10	3,943,487.80	9/3/1966	480	465	8				330.00		P		90	90	DOLAN SPRINGS WTR CO
601847	(B-26-19) 36 CCB	GWSI		203,539.84	3,943,397.68		500	500			3,350	11/9/1995	179.00	2,981.00	P				DOLAN SPRINGS WATER CO
601847	(B-26-19) 36 CCB	55		203,528.50	3,943,479.40	6/20/1978	500	500	6				348.00		P		78	78	DOLAN SPRINGS WTR CO
506004	(B-26-20) 05 BCC	55		187,753.00	3,952,684.80	8/24/1983	525	-	0				470.00		N A	X	-	-	BLM-KINGMAN DISTRICT
505703	(B-26-20) 06 ACB	GWSI	YES	187,528.58	3,952,843.50	7/27/1983	537	537	8.58	457-527	2,500	10/21/2003	460.70	2,039.30	U	X			BLM
505703	(B-26-20) 06 ACB	55		187,558.80	3,952,896.40	7/27/1983	537	537	9				465.00		N	X	-	-	BLM-KINGMAN DISTRICT
506236	(B-26-20) 08 CAA	GWSI		188,290.88	3,950,947.13		560	560			2,560	11/7/1995	478.00	2,082.00	U				BLM
506236	(B-26-20) 08 CAA	55		188,289.00	3,950,852.30	9/22/1983	560	560	6				-		N	X	-	-	BLM-KINGMAN DISTRICT
502441	(B-26-20) 27 BDC	GWSI		191,076.03	3,946,189.88		640	640			2,675	11/7/1995	455.40	2,219.60	S				DEPARTMENT OF INTERIOR
502441	(B-26-20) 27 BCD	55		190,945.50	3,946,132.70	5/14/1982	610	640	8				485.00		N	X	194	181	US DEPT OF INTERIOR/ BURE
513157	(B-26-21) 14	55		183,529.40	3,949,516.00		-	-	0				-		None ME		-	-	KYLLO & NOON
562082	(B-27-19) 07 CAA	55		196,645.50	3,960,230.80	6/24/1998	735	735	8				560.00		H	X	25	40	G H R DELVP INC
573971	(B-27-19) 09 BCC	55		199,243.90	3,960,337.10	7/8/1999	887	887	5				686.00		H	X	8	8	RAYMOND WOOLEVER
587083	(B-27-19) 09 CAC	55		199,634.80	3,959,920.60	6/23/2001	930	930	5				880.00		H	X	-	-	GLEN & SHERRY PRATT
512241	(B-27-19) 09 CCC	55		199,219.80	3,959,531.80	11/20/1985	750	750	7				650.00		H	X	5	5	DARLING, C R
587712	(B-27-19) 09 CDA	55		199,829.80	3,959,712.40	8/1/2001	905	905	5				860.00		H	X	12	5	AL SIMONETTI
642196	(B-27-19) 17 AAA	GWSI		199,082.90	3,959,277.78		750	750			3,635	11/10/1995	621.70	3,013.30	P				WHITE HILLS WATER CO
642196	(B-27-19) 17	55		198,286.00	3,958,663.10	1/1/1964	750	704	8				580.00		P		30	30	WHITE HILLS WATER CO

ERROL L. MONTGOMERY & ASSOCIATES, INC.

TABLE 1. WELL INVENTORY FOR DETRITAL VALLEY
MOHAVE COUNTY, ARIZONA

ADWR 55-WELL REGISTRY NUMBER	WELL IDENTIFIER	SOURCE	ADWR INDEX WELL	UTM COORDINATES (NAD 27) Easting (meters)	UTM COORDINATES (NAD 27) Northing (meters)	DATE COMPLETED	WELL DEPTH (feet, bls)	CASING DEPTH (feet, bls)	CASING DIAMETER (inches)	CASING PERFORATED INTERVAL (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL DATE	WATER LEVEL DEPTH (feet, bls)	WATER LEVEL ALTITUDE (feet, msl)	WELL / WATER USE	LOG TYPE	REPORTED PUMPING RATE (gpm)	REPORTED TESTING RATE (gpm)	OWNER
587342	(B-27-19) 17 ABB	55		198,409.70	3,959,359.90	6/25/2001	830	827	5				765.00		C	X	-	-	KALAMAZOO MATERIALS INC
594398	(B-27-19) 17 DCC	55		198,365.90	3,957,960.40	11/20/2002	700	700	5				-		H	X	12	-	TERI BEGAY
576840	(B-27-19) 17 DDD	55		198,968.40	3,957,943.90	9/16/1999	665	665	4				580.00		H	X	11	11	WILLIAM MOODY
204237	(B-27-19) 17 DDD	55		198,968.40	3,957,943.90		700	700	5				560.00		H	X	-	-	SIMON THOMPSON TRUBY III
547882	(B-27-20) 05	55		188,781.50	3,962,233.40		-	-	0				-		None ME A		-	-	US BORAX INC
551185	(B-27-20) 09 ACC	55		190,434.30	3,960,665.80	3/21/1996	835	835	8				570.00		C	X	20	20	WHITE HILLS WATER CO
583552	(B-27-20) 09 ADD	55		191,034.10	3,960,643.90	10/18/2000	730	730	6				690.00		H	X	10	15	BARNEY GIZOWSKI
594554	(B-27-20) 09 CCC	55		189,609.50	3,959,890.80		863	20	9				-		H	X	-	-	FRANK CARTER
594399	(B-27-20) 09 CCD	55		189,809.80	3,959,883.90		1,365	1,365	6				456.00		H	X	-	-	MARY VALADEZ
543603	(B-27-20) 11	55		193,556.30	3,960,452.40	6/1/1994	460	-	0				-		None ME	X	-	-	WESTERN STATES
601764	(B-27-20) 14 DAB	GWSI		194,029.53	3,958,679.25		615	615			2,960	5/5/1987	503.80	2,456.00	U				CORVAL DEV COMPANY
601764	(B-27-20) 14 ADC	55		194,008.10	3,958,934.10	9/12/1979	615	100	8				490.00		M		10	10	AZ SILVER CORP
589067	(B-27-20) 14 DAB	55		194,001.00	3,958,734.40	10/16/2001	630	630	5				480.00		H	X	-	-	WILLIAM EVERSOLE
538468	(B-27-20) 15 ADD	55		192,596.90	3,958,984.70		-	-	0				-		C		-	-	EVERSOLE, WILLIAM
531420	(B-27-20) 16 AAA	55		190,999.80	3,959,640.90		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
534870	(B-27-20) 16 AAA	55		190,999.80	3,959,640.90		-	-	0				-		C I		-	-	EVERSOLE, WILLIAM
531418	(B-27-20) 18 AAA	55		187,791.30	3,959,753.80		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
534872	(B-27-20) 18 AAA	55		187,791.30	3,959,753.80		-	-	0				-		C I		-	-	EVERSOLE, WILLIAM
528471	(B-27-20) 19 AAA	55		187,729.80	3,958,128.80		-	-	0				-		T		-	-	EVERSOLE, WILLIAM
532210	(B-27-20) 19 AAA	55		187,729.80	3,958,128.80		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
536203	(B-27-20) 19 AAA	55		187,729.80	3,958,128.80		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
528273	(B-27-20) 20 CCC	55		187,877.20	3,956,720.10		-	-	0				-		T		-	-	WILLIAM EVERSOLE
532064	(B-27-20) 20 CCC	55		187,877.20	3,956,720.10		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
536066	(B-27-20) 20 CCC	55		187,877.20	3,956,720.10		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
538470	(B-27-20) 21 BAD	55		190,135.60	3,957,850.00	4/20/1993	1,000	-	0				-		C A	X	-	-	WHITE HILLS MINERAL
528853	(B-27-20) 21 BBB	55		189,543.20	3,958,068.80		-	-	0				-		T		-	-	EVERSOLE, WILLIAM
532515	(B-27-20) 21 BBB	55		189,543.20	3,958,068.80		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
536473	(B-27-20) 21 BBB	55		189,543.20	3,958,068.80		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
583406	(B-27-20) 21 CCC	55		189,495.10	3,956,655.40	9/14/2001	655	655	5				554.00		H	X	-	-	GERALD M RHOADS
585019	(B-27-20) 21 DCC	55		190,294.00	3,956,630.50		553	655	5				553.00		H	X	-	-	GERALD M RHOADS
531417	(B-27-20) 28 DDD	55		190,844.80	3,955,004.60		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
534869	(B-27-20) 28 DDD	55		190,844.80	3,955,004.60		-	-	0				-		C I		-	-	EVERSOLE, WILLIAM
532454	(B-27-20) 29 AAA	55		189,285.40	3,956,461.80		-	-	0				-		I C		-	-	EVERSOLE, WILLIAM
536362	(B-27-20) 29 AAA	55		189,285.40	3,956,461.80		-	-	0				-		C		-	-	EVERSOLE, WILLIAM
528746	(B-27-20) 29 AAA	55		189,285.40	3,956,461.80		-	-	0				-		T H		-	-	EVERSOLE, WILLIAM
576054	(B-27-20) 29 ABB	55		188,677.60	3,956,486.30	11/10/1999	635	635	5				540.00			X	32	25	JAMES N KING
597876	(B-27-20) 29 ABD	55		188,873.30	3,956,277.40		665	665	7				555.00		I H	X	-	-	K C CAMIS
580381	(B-27-20) 29 CBB	55		187,844.70	3,955,713.30	1/7/2001	420	-	0				-		H	X	-	-	DANIEL & OLIVIA HARTLEY
585092	(B-27-20) 29 CBB	55		187,844.70	3,955,713.30	5/9/2001	600	600	5				538.00		H	X	28	24	DANIEL & OLIVIA HARTLEY
203076	(B-27-20) 29 DBB	55		188,652.00	3,955,683.70		-	-	0				-		H		-	-	ROGER & KADY PEARSON
203376	(B-27-20) 29 DBB	55		188,652.00	3,955,683.70		-	-	0				-		H		-	-	EDWARD COUTURE
531419	(B-27-20) 30 DDD	55		187,626.30	3,955,118.00		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
598606	(B-27-20) 31 AAA	55		187,618.80	3,954,915.80		-	-	0				-		H S		-	-	SILVER BASIN INC
598605	(B-27-20) 31 AAA	55		187,618.80	3,954,915.80		-	-	0				-		H S		-	-	SILVER BASIN INC
598604	(B-27-20) 31 ADC	55		187,400.90	3,954,318.60		-	-	0				-		H S		-	-	SILVER BASIN INC
598603	(B-27-20) 31 ADC	55		187,400.90	3,954,318.60		-	-	0				-		H S		-	-	SILVER BASIN INC
598603	(B-27-20) 31 ADC	Driller				6/25/2003	1,175	20	9-7/8		2,509					X			Silver Basin Inc.
598603	(B-27-20) 31 ADC	Driller				6/25/2003	1,175	640	6-5/8	525 - 546	2,509	6/24/2003	460.00			X			Silver Basin Inc.
606080	(B-27-21) 13 CCA	GWSI		184,920.19	3,958,720.54		550	550			2,400	11/8/1995	384.00	2,016.00	P				K BAUER
606080	(B-27-21) 13 CC	55		184,835.00	3,958,556.30	3/12/1966	550	-	10				-		H		75	75	EVERSOLE, WILLIAM
592212	(B-27-21) 13 CCC	55		184,729.50	3,958,461.00	6/10/2002	530	505	7				420.00		H	X	-	-	RAY THOMPSON
641388	(B-27-21) 24 BDA	GWSI		185,193.11	3,957,910.15		460	460			2,405	10/28/1992	390.30	2,015.00	H				K BAUER
641388	(B-27-21) 24 BDC	55		185,100.60	3,957,636.40	1/1/1978	460	460	8				400.00		H		30	30	BOULDER CITY AEROCLB
803912	(B-27-21) 24 CDD	GWSI		185,304.86	3,956,793.29		465	465			2,422				H				WILLIAM EVERSOLE
803912	(B-27-21) 24 C	55		184,980.50	3,957,136.30	6/28/1973	465	465	10				430.00		H		13	-	EVERSOLE, WILLIAM
594553	(B-27-21) 25 ABC	55		185,457.90	3,956,410.10		513	505	7				415.00		C	X	-	-	JOHN MORALLY
584114	(B-27-21) 25 ACA	55		185,652.30	3,956,201.40		870	870	8				420.00		C S	X	-	-	ARIZONA LAND DEVELOPMENT

ERROL L. MONTGOMERY & ASSOCIATES, INC.

TABLE 1. WELL INVENTORY FOR DETRITAL VALLEY
MOHAVE COUNTY, ARIZONA

ADWR 55-WELL REGISTRY NUMBER	WELL IDENTIFIER	SOURCE	ADWR INDEX WELL	UTM COORDINATES (NAD 27) Easting (meters)	UTM COORDINATES (NAD 27) Northing (meters)	DATE COMPLETED	WELL DEPTH (feet, bls)	CASING DEPTH (feet, bls)	CASING DIAMETER (inches)	CASING PERFORATED INTERVAL (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL DATE	WATER LEVEL DEPTH (feet, bls)	WATER LEVEL ALTITUDE (feet, msl)	WELL / WATER USE	LOG TYPE	REPORTED PUMPING RATE (gpm)	REPORTED TESTING RATE (gpm)	OWNER
584114	(B-27-21) 25 ACA	Driller				5/5/2001	870	20	12		2,430	- -2001	420.00			X			ARIZONA LAND DEVELOPMENT
584114	(B-27-21) 25 ACA	Driller				5/5/2001	870	870	8	510-590	2,430					X		100	ARIZONA LAND DEVELOPMENT
584114	(B-27-21) 25 ACA	Driller				5/5/2001	870	870	8	810-850	2,430					X		100	ARIZONA LAND DEVELOPMENT
584114	(B-27-21) 25 ACA	Driller					1,500	875	8-5/8		2,430	6/15/2004	461.00			X			ARIZONA LAND DEVELOPMENT
584114	(B-27-21) 25 ACA	Driller					1,500	1,080	6-5/8		2,430					X			ARIZONA LAND DEVELOPMENT
598610	(B-27-21) 25 ACA	55		185,652.30	3,956,201.40		-	-	0				-		C S		-	-	ARIZONA LAND DEVELOPMENT
598884	(B-27-21) 25 ACA	55		185,652.30	3,956,201.40		-	-	0				-		C S		-	-	ARIZONA LAND DEVELOPMENT
204336	(B-27-21) 25 ACA	55		185,652.30	3,956,201.40		-	-	0				-		S M		-	-	ARIZONA LAND DEVELOPMENT
803813	(B-27-21) 25 BAA	GWSI		185,322.36	3,956,576.62		485	485			2,430	10/28/1992	420.40	2,009.60	H				ROSE LARSEN
803813	(B-27-21) 25 BAA	55		185,263.40	3,956,619.50	1/1/1962	485	485	6				-		H		20	-	LARSEN, ROSE, C
542957	(B-27-21) 25 BDC	55		185,040.60	3,956,022.30		-	-	0				-		H		-	-	THOMPSON, LAWRENCE,W
550438	(B-27-21) 25 BDD	55		185,242.10	3,956,014.90	1/8/1996	540	540	5				446.00		I	X	7	7	THOMPSON, LAWRENCE,W
577325	(B-27-21) 25 CAA	55		185,235.00	3,955,813.60		-	-	0				-		H		-	-	RICKY KEMP
588355	(B-27-21) 25 CAA	55		185,235.00	3,955,813.60		-	-	0				-		H		-	-	VELMA BLACKWELL
575891	(B-27-21) 25 CAB	55		185,033.50	3,955,820.80	11/7/1999	520	520	4				460.00		I	X	35	28	RICKY KEMP
205349	(B-27-21) 25 CCD	55		184,810.90	3,955,223.10		-	-	0				-		H		-	-	H G GIBSON
539173	(B-27-21) 25 CDB	55		185,019.30	3,955,417.90		-	-	0				-		H S		-	-	EDWARD L CLINE
805897	(B-27-21) 25 DDC	GWSI		185,775.03	3,955,140.52		600	600			2,460	11/8/1995			H				DALE SMITH
805897	(B-27-21) 25 DDC	55		185,817.60	3,955,187.90	12/31/1950	600	600	8				40.00		S		30	-	SMITH, DALE, D
642309	(B-27-21) 35 DD	55		184,272.50	3,953,717.10		-	-	0				-		S		-	-	BLM-PHOENIX DISTRICT
550571	(B-28-19) 10	55		201,906.20	3,969,810.10	8/1/1995	-	-	0				-		None ME	X	-	-	WESTERN STATES MNRLS
614907	(B-28-19) 16 DAC	GWSI		200,637.91	3,968,050.89		200	200			4,075	7/3/1984	199.20	3,875.00	U				ARIZONA STATE LAND DEPT
614907	(B-28-19) 16 DAC	55		200,714.70	3,967,943.80		-	-	6				-				-	-	AZ STATE LAND DEPT
805903	(B-28-19) 16 DAC	55		200,714.70	3,967,943.80	12/31/1955	200	200	6				160.00		S		-	-	ARIZONA ACREAGE LLC
581698	(B-28-19) 21 AAA	55		200,890.80	3,967,334.80	8/3/2000	695	695	5				250.00		M	X	-	-	KALAMAZOO MATERIALS INC
548572	(B-28-19) 23	55		203,394.80	3,966,548.40	1/31/1996	-	-	0				-		None ME	X	-	-	WESTERN STATES MNRLS
530262	(B-28-19) 25	55		204,948.40	3,964,885.00	6/30/1991	-	-	0				-		None ME	X	-	-	PRIME EXPLORATION
539141	(B-28-19) 25	55		204,948.40	3,964,885.00	6/5/1993	-	-	0				-		None ME A	X	-	-	CAMBIOR EXPLORATION
901060	(B-28-19) 25	55		204,948.40	3,964,885.00		-	-	0				-		None		-	-	AURUMBANK, INC
901062	(B-28-19) 25	55		204,948.40	3,964,885.00		-	-	0				-		None		-	-	AURUMBANK, INC
548149	(B-28-19) 25	55		204,948.40	3,964,885.00	7/31/1995	-	-	0				-		None ME	X	-	-	WESTERN STATES MIN
558482	(B-28-19) 25	55		204,948.40	3,964,885.00	6/30/1997	-	-	0				-		None ME	X	-	-	NEVADA PACIFIC
562651	(B-28-19) 25	55		204,948.40	3,964,885.00		-	-	0				-		None A		-	-	NEVADA PACIFIC MININ
510960	(B-28-19) 25	55		204,948.40	3,964,885.00	5/20/1985	-	-	0				-		None ME A	X	-	-	AMOCO MINERALS CO
543604	(B-28-19) 25	55		204,948.40	3,964,885.00	4/30/1995	-	-	0				-		None ME	X	-	-	WESTERN STATES
598607	(B-28-19) 29 DCC	55		198,583.40	3,964,406.20		-	-	0				-		H S		-	-	ARIZONA ACREAGE LLC
598608	(B-28-19) 29 DCC	55		198,583.40	3,964,406.20		-	-	0				-		H S		-	-	ARIZONA ACREAGE LLC
204338	(B-28-19) 29 DCC	55		198,583.40	3,964,406.20		-	-	0				-		S M		-	-	ARIZONA ACREAGE LLC
204338	(B-28-19) 29 DCC	Driller					1,160	20	9-7/8		3,800					X			Arizona Acreage, LLC
204338	(B-28-19) 29 DCC	Driller					1,160	1,130	6-5/8	1,000 - 1,120	3,800	2/1/2005	799.00			X			Arizona Acreage, LLC
204337	(B-28-19) 31 AAA	55		197,564.00	3,964,240.00		-	-	0				-		H S M		-	-	ARIZONA ACREAGE LLC
204337	(B-28-19) 31 AAA	Driller					960	20	9-7/8		3,640					X			Arizona Acreage, LLC
204337	(B-28-19) 31 AAA	Driller					960	920	6-5/8	820 - 920	3,640	2/1/2005	622.00			X			Arizona Acreage, LLC
512960	(B-28-20) 25	55		195,339.90	3,965,227.90	1/30/1986	-	-	0				-		None A	X	-	-	SANTA FE MINING INC
805902	(B-28-20) 25 ACC	55		195,442.90	3,965,325.10	12/31/1955	600	600	8				450.00		S		10	-	ARIZONA ACREAGE LLC
547883	(B-28-20) 28	55		190,507.90	3,965,381.60	3/31/1995	-	-	0				-		None ME	X	-	-	US BORAX INC
547884	(B-28-20) 29	55		188,903.80	3,965,435.90		-	-	0				-		None ME		-	-	US BORAX INC
547885	(B-28-20) 30	55		187,305.00	3,965,495.70	3/16/1995	-	-	0				-		None ME A	X	-	-	US BORAX INC
547886	(B-28-20) 33	55		190,447.90	3,963,781.70	3/2/1995	-	-	0				-		None ME A	X	-	-	US BORAX INC
801524	(B-28-21) 20 AD	55		179,919.60	3,967,564.70	9/25/1980	385	184	6				-		S		-	-	BLM-PHOENIX DISTRICT
505400	(B-28-21) 20 ADB	GWSI	YES	179,889.20	3,967,852.11	9/25/1980	385	385	6	345-385	2,330	10/21/2003	304.40	2,025.60	U	X			BLM
505400	(B-28-21) 20 AAB	55		179,834.50	3,968,072.60	9/25/1980	385	385	6				307.00		S	X	25	25	BLM-PHOENIX DISTRICT
805896	(B-28-21) 20 DAC	55		179,804.60	3,967,063.30	12/31/1978	350	350	8				240.00		S		5	-	ARIZONA ACREAGE LLC
531378	(B-28-21) 23 CCC	GWSI		183,335.71	3,966,493.34		503	503			2,180	11/8/1995	194.80	1,985.20	U				WILLIAM HINTZE
531378	(B-28-21) 23 CCC	55		183,419.40	3,966,552.70	5/21/1991	503	503	6				180.00		M	X	60	55	HINTZE, WILLIAM, E
535632	(B-28-21) 23 CCC	55		183,419.40	3,966,552.70	6/9/1992	365	365	8				210.00		M	X	90	90	HINTZE, WILLIAM, E
533561	(B-28-21) 26 BAB	55		183,808.50	3,966,344.00	1/15/1992	485	480	6				255.00		M	X	-	-	WALKUP, CHESTER, E

ERROL L. MONTGOMERY & ASSOCIATES, INC.

TABLE 1. WELL INVENTORY FOR DETRITAL VALLEY
MOHAVE COUNTY, ARIZONA

ADWR 55-WELL REGISTRY NUMBER	WELL IDENTIFIER	SOURCE	ADWR INDEX WELL	UTM COORDINATES (NAD 27) Easting (meters)	UTM COORDINATES (NAD 27) Northing (meters)	DATE COMPLETED	WELL DEPTH (feet, bls)	CASING DEPTH (feet, bls)	CASING DIAMETER (inches)	CASING PERFORATED INTERVAL (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL DATE	WATER LEVEL DEPTH (feet, bls)	WATER LEVEL ALTITUDE (feet, msl)	WELL / WATER USE	LOG TYPE	REPORTED PUMPING RATE (gpm)	REPORTED TESTING RATE (gpm)	OWNER
[illegible]	(B-28-21) 26 BBB	GWSI		183,357.52	3,966,399.96						2,180	11/8/1995	194.60	1,985.20	I				CANYON SAND AND GRAVEL
501132	(B-28-21) 26 BBD	GWSI		183,527.82	3,966,239.54		400	400			2,190	11/8/1995	198.50	1,991.40	O				BLM
501132	(B-28-21) 26 BBD	55		183,602.80	3,966,144.00	11/1/1981	400	400	10				195.00		O - M	X	40	40	BUREAU OF LAND MANAGEMENT
637017	(B-29-19) 29 BB	55		197,493.20	3,975,427.40	1/1/1950	1,000	1,000	6				900.00		S		15	15	ARIZONA ACREAGE LLC
523710	(B-29-21) 19	55		177,235.70	3,977,142.10		-	-	0				-		None ME		-	-	GEXA GOLD CORP
526704	(B-29-21) 19	55		177,235.70	3,977,142.10	1/22/1990	525	-	5				-		None ME A	X	-	-	WHARF RESOURCES INC
546600	(B-29-21) 27 CCD	55		181,489.50	3,974,677.20		-	-	0				-		M		-	-	AZ STATE LAND DEPT
546599	(B-29-21) 27 DDC	55		182,493.10	3,974,644.60		-	-	0				-		M		-	-	AZ STATE LAND DEPT
545711	(B-29-21) 28 DDD	GWSI		181,162.70	3,974,565.89		400	400			2,005	11/8/1995	71.80	1,933.20	U				BITTERROOT RESOURCES
545711	(B-29-21) 28 DDD	55		181,085.80	3,974,691.60	8/19/1994	400	400	7				73.00		M C	X	85	25	A & K EARTH MOVERS INC
637019	(B-29-21) 35 CC	55		182,941.30	3,973,104.40	2/5/1958	100	100	8				40.00		S		20	20	ARIZONA ACREAGE LLC
[illegible]	(B-29-21) 35 CCB	GWSI		182,859.38	3,973,110.38						1,980	10/27/1992	0.73	1,979.27	U				
629128	(B-30-20) 06 CAB UNSURV	GWSI	YES	187,213.91	3,990,952.56		185	185			1,339	10/21/2003	57.50	1,281.50	U				NPS
629128	(B-30-20) 06 BDD	55		187,286.30	3,991,400.00	1/1/1957	-	-	0				-				-	-	NATL PARK SERVICE
[illegible]	(B-31-19) 28 CCC UNSURV	GWSI		199,218.61	3,993,282.31						948				U				NPS
629134	(B-31-19) 33 ACA UNSURV	GWSI		200,677.74	3,992,556.93		200				1,280	11/8/1995							NPS
629134	(B-31-19) 33 ACA	55		200,582.30	3,992,767.30	1/1/1952	200	-	6				125.00				-	-	NATL PARK SERVICE
[illegible]	(B-31-19) 33 ACC UNSURV	GWSI		200,377.24	3,992,489.92						1,312	11/8/1995	91.50	1,220.50	U				NPS
629084	(B-31-19) 33 ACC UNSURV	GWSI		200,340.31	3,992,502.44		250	250			1,280	9/1/1995	120.00	1,160.00	P				NPS
629084	(B-31-19) 33 ACC	55		200,377.70	3,992,571.80	7/10/1965	250	130	12				120.00		P		35	35	NATL PARK SERVICE
629135	(B-31-19) 33 ACC	55		200,377.70	3,992,571.80	9/25/1957	183	-	12				112.00				-	-	NATL PARK SERVICE
629139	(B-31-19) 33 ACC 1	GWSI		200,419.64	3,992,623.15		183	183			1,270	9/1/1957	112.00	1,158.00	P				NPS
629086	(B-31-19) 32 BCC UNSURV	GWSI		199,628.97	3,992,958.83		200	200			1,269	11/9/1995	44.60	1,218.40	P				NPS
629085	(B-31-19) 32 ADA	55		199,383.50	3,992,807.10	6/1/1967	200	-	12				89.00		P		35	35	NATL PARK SERVICE
629086	(B-31-19) 33 BCC UNSURV	GWSI		199,616.29	3,992,588.92		275	240			1,276	11/9/1995	98.70	1,177.30	P				NPS
629086	(B-31-19) 32 DAA	55		199,372.80	3,992,403.60	11/8/1975	240	240	12				112.00		P		240	240	NATL PARK SERVICE

NOTE: This inventory excludes wells located in bedrock areas identified in Arizona Department of Water Resources (ADWR) Hydrologic Map Series Reoprt Number 14, June 1987.

ABBREVIATIONS:

55 = current ADWR registry of wells
ADWR = Arizona Department of Water Reources
BLM = U.S. Bureau of Lad Management
feet, bls = feet below land surface
feet, msl = feet below mean sea level
gpm = gallons per minute
GWSI = Ugroundwater Site Inventory (maintained by ADWR)
NAD 27 = North American Datum, 1927
NPS = National park Service
UTM = Universal Transverse Mercator map projection

WATER USE

A = Abandoned
B = Utility
C = Commercial
H = Domestic
I = Irrigation
M = Monitoring
ME = Mineral Exploration
N = Industrial
None = No water use
O = Other
P = Public Supply/Municipal
Pr = Production
R = Recreational
S = Stock
T = Test
U = Unused

ERROL L. MONTGOMERY & ASSOCIATES, INC.

TABLE 2. WATER QUALITY DATA ADWR GWSI DATABASE
DETRITAL VALLEY, MOHAVE COUNTY, ARIZONA

GWSI SITE ID	Cadastral Location	ADWR 55-REGISTRY NUMBER	DATE	SPECIFIC CONDUCTANCE (uS/cm)	FLUORIDE (mg/L)	TEMPERATURE (Degrees C)	pH	ALKALINITY (mg/L)	DISSOLVED OXYGEN (mg/L)	DISSOLVED SOLIDS (mg/L)
351921114241401	B-22-20 03CAA	651171								
351853114245001	B-22-20 09AAB	No Match								
352342114214901	B-23-20 12DBA	No Match								
352012114235901	B-23-20 34DBA1	No Match	7/4/1984	445	0.3	23.				289.25
352012114240001	B-23-20 34DBA2	No Match	7/4/1984	410	0.2	27.				266.5
352710114133701	B-24-18 20CAA	651169								
352715114133201	B-24-18 20DBB	651170								
352600114145701	B-24-18 30CCD	642320	8/29/1985	2,550	0.5	24.	7.1	300.		1,657.5
352939114163801	B-24-19 02DCA	No Match								
352918114192801	B-24-19 08AAD	No Match								
352842114300201	B-24-21 10DDA	642315								
352838114295601	B-24-21 11CCB1	No Match	5/4/1987	930	1.1		8.3			604.5
352838114295701	B-24-21 11CCB2	No Match								
322658114293301	B-24-21 23CDA	651165	5/4/1987	695	1.1	20.	7.5			451.75
353520114160501	B-25-19 01BAB	606511	7/29/1999	450		29.	7.8			292.5
353513114161701	B-25-19 01BBC	508835	7/29/1999	450		29.	8.			292.5
353434114182701	B-25-19 03CCC	601641	6/21/1984	422	0.6					274.3
353353114171801	B-25-19 11CBD	No Match								
353251114201001	B-25-19 17CDD	612456								
353232114200501	B-25-19 20ACB	510178	7/29/1999	400		31.	7.9			260.
355155114204301	B-25-19 30AAA	650952	6/22/1984	426	0.4					276.9
353151114212901	B-25-19 30BBA	805963								
353059114204301	B-25-19 31AAA	637115								
353339114233501	B-25-20 11CDC	645459								
353337114235201	B-25-20 15AAA	No Match	7/10/2001	342	0.6	29.5	8.	114.	5.7	222.3
353337114235201	B-25-20 15AAA	No Match	5/1/1990	345	0.9	28.5	8.1	122.		224.25
353337114235201	B-25-20 15AAA	No Match	3/14/1989	350	0.6	31.	7.8	116.		227.5
353337114235201	B-25-20 15AAA	No Match	8/29/1989	340	0.6	28.	8.	120.		221.
353337114235201	B-25-20 15AAA	No Match	5/23/2000	348	0.7	29.	8.3	109.	3.9	226.2
353337114235201	B-25-20 15AAA	No Match	6/21/1984	348	0.5					226.2
353337114235201	B-25-20 15AAA	No Match	4/30/1997	343	0.7	30.5	7.9	114.	5.8	222.95
353337114235201	B-25-20 15AAA	No Match	6/5/1996	341	0.7	29.	8.	116.		221.65
353337114235201	B-25-20 15AAA	No Match	4/4/1995	342	0.7	29.	8.6	123.		222.3
353337114235201	B-25-20 15AAA	No Match	3/17/1992	345	0.6	28.5	8.2	122.		224.25
353337114235201	B-25-20 15AAA	No Match	3/22/1994	340	0.7	29.5	8.2	118.		221.
353337114235201	B-25-20 15AAA	No Match	4/29/1998	332	0.8	29.	8.	117.	5.4	215.8
353337114235201	B-25-20 15AAA	No Match	7/16/1991	330	0.6	29.5	8.1	121.		214.5

TABLE 2. WATER QUALITY DATA ADWR GWSI DATABASE
DETRITAL VALLEY, MOHAVE COUNTY, ARIZONA

GWSI SITE ID	Cadastral Location	ADWR 55-REGISTRY NUMBER	DATE	SPECIFIC CONDUCTANCE (uS/cm)	FLUORIDE (mg/L)	TEMPERATURE (Degrees C)	pH	ALKALINITY (mg/L)	DISSOLVED OXYGEN (mg/L)	DISSOLVED SOLIDS (mg/L)
353337114235201	B-25-20 15AAA	No Match	3/9/1988	355	0.4	28.	4.8	117.		230.75
353337114235201	B-25-20 15AAA	No Match	10/26/1993	380		26.5				247.
353337114235201	B-25-20 15AAA	No Match	8/12/1987	350	0.6	30.5	7.8	118.		227.5
353337114235201	B-25-20 15AAA	No Match	3/3/1993	340	0.6	28.5	8.	113.		221.
353017114234801	B-25-20 35CCB	540938								
353521114302901	B-25-21 03ABA	621799								
353035114292201	B-25-21 35DAB	621800	6/21/1984	960	2.2	21.5				624.
353552114145201	B-26-18 31BDB	601849	6/21/1984	400	0.3					260.
353552114145201	B-26-18 31BDB	601849	7/16/1999	520		23.	7.7			338.
354010114175001	B-26-19 03ACD1	No Match								
354010114175002	B-26-19 03ACD2	No Match								
353735114195401	B-26-19 20ACD	No Match	5/5/1987	510	0.7	24.	8.1			331.5
353608114164801	B-26-19 35AB	No Match								
353537114162001	B-26-19 35CCB1	601846	7/16/1999	400		28.	8.1			260.
353537114162001	B-26-19 35CCB1	601846	6/21/1984	378	0.3	27.				245.7
353536114154001	B-26-19 36ACA	520733	7/29/1999	430		29.	7.7			279.5
353528114162501	B-26-19 36CCB2	601847	8/29/1985	535	0.6	26.5	7.9	139.		347.75
354027114273101	B-26-20 06ACB	505703								
353918114263601	B-26-20 08CAA	506236								
353658114244401	B-26-20 27BDC	502441								
353759114302401	B-26-21 15ADB	No Match								
353800114305101	B-26-21 22BAB	No Match								
353627114301101	B-26-21 26CCB	644346								
354543114164201	B-27-19 02ABA	614906								
354437114163901	B-27-19 11ADC	No Match	5/5/1987	790	0.8	22.	7.9			513.5
354414114162901	B-27-19 11DDA	621797								
354414114162501	B-27-19 12CCB	No Match								
354402114194001	B-27-19 17AAA	642196	5/5/1987	536	1.6	25.	8.3			348.4
354344114225701	B-27-20 14DAB	601764								
354320114285901	B-27-21 13CCA	606080								
354251114284901	B-27-21 24BDA	641388								
354224114284101	B-27-21 24CDD	803912								
354217114284001	B-27-21 25BAA	803813	6/20/1984	442	0.9					287.3
354217114284001	B-27-21 25BAA	803813	11/8/1995	462		28.	8.			300.3
354217114284001	B-27-21 25BAA	803813	8/29/1985	485	1.1	27.	8.	108.		315.25
354151114282001	B-27-21 25DDC	805897								
354846114184701	B-28-19 16DAC	614907								

ERROL L. MONTGOMERY & ASSOCIATES, INC.

TABLE 2. WATER QUALITY DATA ADWR GWSI DATABASE DETRITAL VALLEY, MOHAVE COUNTY, ARIZONA

GWSI SITE ID	Cadastral Location	ADWR 55-REGISTRY NUMBER	DATE	SPECIFIC CONDUCTANCE (uS/cm)	FLUORIDE (mg/L)	TEMPERATURE (Degrees C)	pH	ALKALINITY (mg/L)	DISSOLVED OXYGEN (mg/L)	DISSOLVED SOLIDS (mg/L)
354838114323201	B-28-21 20ADB	505400	7/3/1984	650	1.7	26.				422.5
354736114301301	B-28-21 23CCC	531378								
354733114301201	B-28-21 26BBB	No Match								
354728114300501	B-28-21 26BBD	501132	7/22/1986	562	0.7	25.5	8.2	114.		365.3
355155114315101	B-29-21 28DDD	545711								
355110114304101	B-29-21 35CCB	No Match								
360105114281101	B-30-20 06CAD UNSURV	629128	2/1/1996	1,530	1.	24.5	7.9	122.		994.5
360105114281101	B-30-20 06CAD UNSURV	629128	7/22/1986	1,920	0.9	24.5	7.6	114.		1,248.
360105114281101	B-30-20 06CAD UNSURV	629128	5/16/1990	1,780	0.7	24.5	7.9	122.		1,157.
360105114281101	B-30-20 06CAD UNSURV	629128	7/3/1991	1,680	0.8	25.5	7.7	120.		1,092.
360105114281101	B-30-20 06CAD UNSURV	629128	5/20/1992	1,625	0.8	24.5	7.6	118.		1,056.25
360105114281101	B-30-20 06CAD UNSURV	629128	1/20/1994	1,600	1.1	24.5	7.6	117.		1,040.
360105114281101	B-30-20 06CAD UNSURV	629128	1/21/1999	1,450	1.	25.	7.5	119.		942.5
360105114281101	B-30-20 06CAD UNSURV	629128	5/11/2000	1,420	1.1	25.	7.5	123.	7.2	923.
360105114281101	B-30-20 06CAD UNSURV	629128	7/15/1997	1,500	1.	25.	7.6	123.	6.3	975.
360105114281101	B-30-20 06CAD UNSURV	629128	7/14/1998	1,460	1.	25.	7.5	123.	6.1	949.
360105114281101	B-30-20 06CAD UNSURV	629128	2/25/1993	1,500	0.8	25.5	7.5	108.		975.
355927114350601	B-30-22 13ADA	No Match	5/6/1987	835	0.8	18.	7.9			542.75
355927114350601	B-30-22 13ADA	No Match	2/18/1972			17.				
360226114195801	B-31-19 28CCD	No Match	11/1/1964			15.				
360206114192401	B-31-19 33ACA UNSURV	629134								
360156114193101	B-31-19 33ACC UNSURV	No Match								
360202114192901	B-31-19 33ACC1	629135	8/1/1964			23.8				
360158114193200	B-31-19 33ACC2	629084								
360205114201201	B-31-19 33BBC UNSURV	629085								
360156114201701	B-31-19 33BCC UNSURV	629086	11/12/1975	750		24.				487.5

ADWR = Arizona Department of Water Quality
GWSI = Groundwater Site Inventory
Degrees C = degrees Celsius
mg/L = milligrams per liter
uS/cm = microSiemans per centimeter

TABLE 3. RESULTS OF LABORATORY CHEMICAL ANALYSES FOR GROUNDWATER SAMPLES OBTAINED FROM WELLS IN AREA OF THE VILLAGES AT WHITE HILLS MOHAVE COUNTY, ARIZONA

ADWR Well Identifier:		55-803813	55-910788	55-910788	55-910788
Cadastral Location:		(B-27-21) 25 BAA	(B-27-21) 25 ADC	(B-27-21) 25 ADC	(B-27-21) 25 ADC
Well Name:		---	WH-1	WH-1	WH-1
Depth:		---	475	515	1,545
Date Sampled:		3/4/2005	3/6/2005	3/6/2005	3/13/2005
Time Sampled:		8:05	14:45	17:10	14:20
Lab Work Order:		0503084-01	0503084-03	0503084-04	0503188-03
	UNITS				
FIELD PARAMETERS:					
Field Temperature	deg C	25.2	25.8	25.1	40.3
Field pH	std units	6.89	7.59	7.8	7.81
Field Electrical Conductivity	uS/cm	448	431	450	1,195
LAB RESULTS:					
Antimony	mg/L	< 0.0030	< 0.0030	< 0.0030	< 0.0010
Arsenic	mg/L	0.012	< 0.0040	< 0.0040	< 0.0010
Barium	mg/L	0.081	0.028	0.036	0.15
Beryllium	mg/L	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Cadmium	mg/L	< 0.0030	< 0.0030	< 0.0030	< 0.0030
Chromium	mg/L	0.033	< 0.010	< 0.010	< 0.010
Copper	mg/L	0.011	< 0.010	0.012	< 0.010
Iron	mg/L	< 0.10	< 0.10	< 0.10	< 0.10
Lead	mg/L	< 0.0030	< 0.0030	< 0.0030	< 0.0010
Manganese	mg/L	< 0.010	0.088	0.10	0.10
Mercury	mg/L	< 0.0030	< 0.0002	< 0.0002	< 0.0002
Nickel	mg/L	< 0.010	< 0.010	< 0.010	< 0.010
Selenium	mg/L	< 0.0030	< 0.0030	< 0.0030	0.0041
Thallium	mg/L	< 0.0020	< 0.0020	< 0.0020	< 0.0010
Calcium	mg/L	24	15	18	15
Magnesium	mg/L	10	8.2	8.7	< 1.0
Potassium	mg/L	4.1	5.0	5.3	3.6
Sodium	mg/L	51	60	59	200
Silica	mg/L	27	13	15	15
Chloride	mg/L	36	34	34	200
Fluoride	mg/L	1.1	1.1	1.1	0.9
Sulfate (as SO4)	mg/L	42	35	42	130
Nitrate (as N)	mg/L	< 0.50	< 0.50	< 0.50	4.1
Nitrite (as N)	mg/L	< 0.020	< 0.020	< 0.020	< 0.020
Bicarbonate - HCO3 (as CaCO3)	mg/L	120	140	110	63
Carbonate - CO3 (as CaCO3)		< 20	< 20	< 20	< 20
Hydroxide - OH (as CaCO3)	mg/L	< 20	< 20	< 20	< 20
Total Alkalinity (as CaCO3)	mg/L	120	140	110	63
pH	std units	---	---	---	---
Hardness, Calcium	mg/L	61	37	45	41
Specific Conductance (uS/cm)	uS/cm	450	450	460	1,200
Total Dissolved Solids	mg/L	280	260	260	680
Gross Alpha Activity	pCi/L	4.8	2.3	3.6	1.1

deg C = degrees Celsius
mg/L = milligrams per liter
uS/cm = microSiemens per centimeter
pCi/L = picoCuries per liter
std units = standard units
mV = millivolts

CONTENTS

ILLUSTRATIONS

1 LOCATION MAP FOR DETRITAL VALLEY

2 GROUNDWATER LEVEL HYDROGRAPH FOR UPPER BASIN-FILL DEPOSITS AQUIFER, DETRITAL VALLEY

3 STIFF DIAGRAMS FOR UPPER BASIN-FILL DEPOSITS AQUIFER, DETRITAL BASIN

4 PROJECTED GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY, AVERAGE ANNUAL DTOTAL PUMPING RATE OF 8,225 ACRE-FEET PER YEAR

5 PROJECTED GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY, AVERAGE ANNUAL DTOTAL PUMPING RATE OF 16,500 ACRE-FEET PER YEAR

6 HYDROGRAPH OF GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY

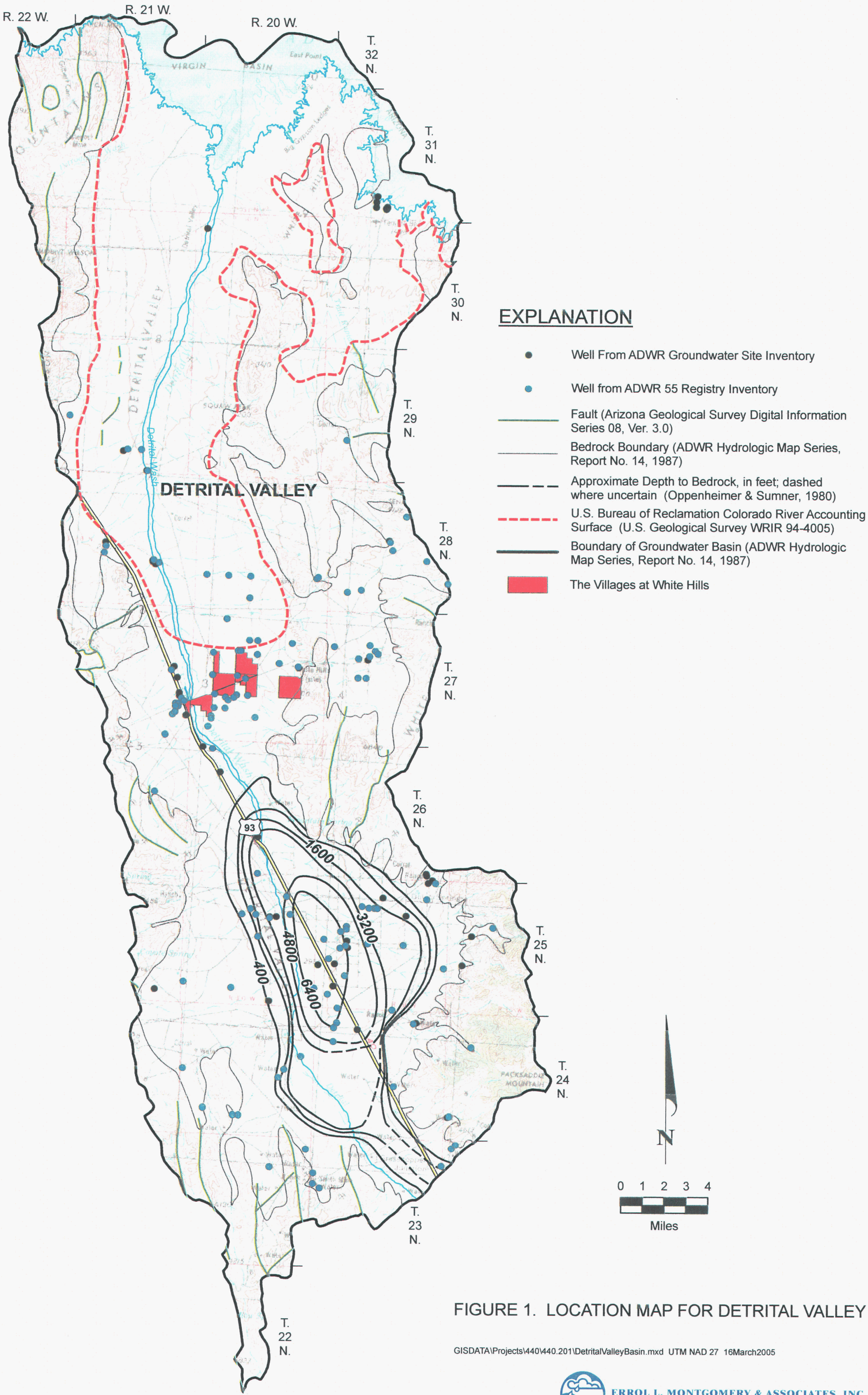


FIGURE 1. LOCATION MAP FOR DETRITAL VALLEY

GISDATA\Projects\440\440.201\DetritalValleyBasin.mxd UTM NAD 27 16March2005

ERROL L. MONTGOMERY & ASSOCIATES, INC.

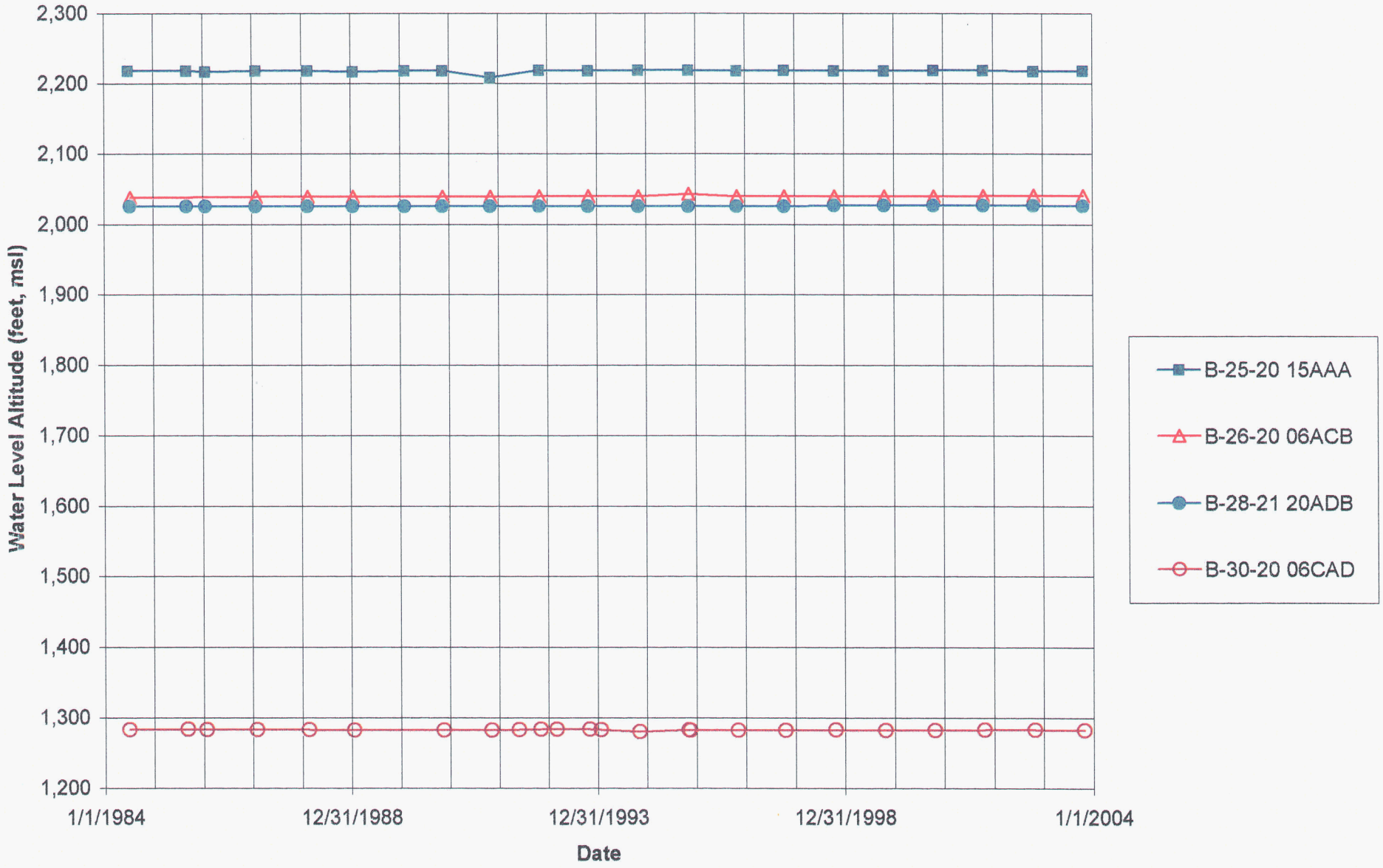


FIGURE 2. GROUNDWATER LEVEL HYDROGRAPH FOR UPPER BASIN-FILL DEPOSITS AQUIFER, DETRITAL VALLEY

Figure 2.Hydrograph.Detrital.xls / 3/17/2005
Rhodes Homes [#440]

ERROL L. MONTGOMERY & ASSOCIATES, INC.

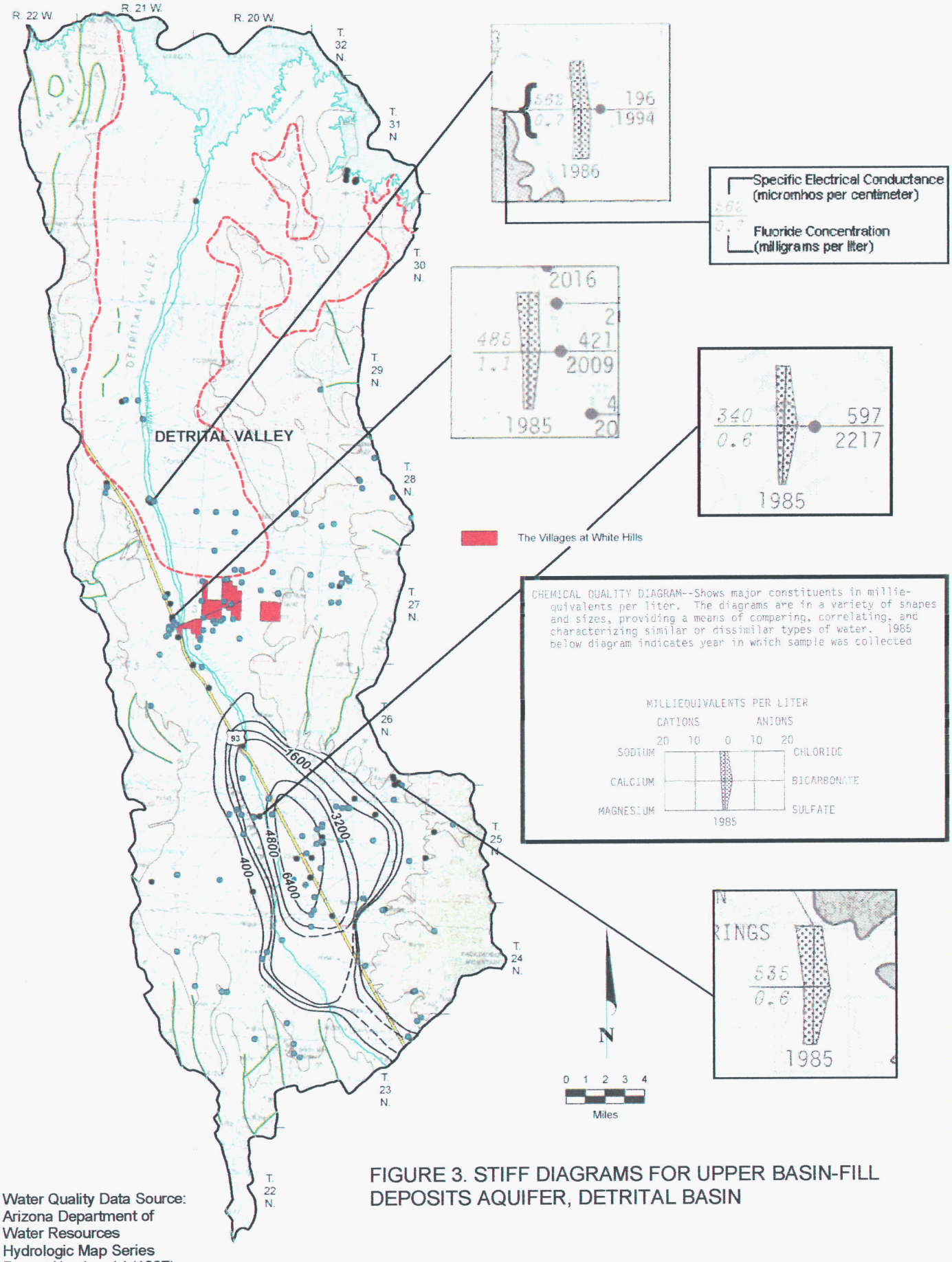
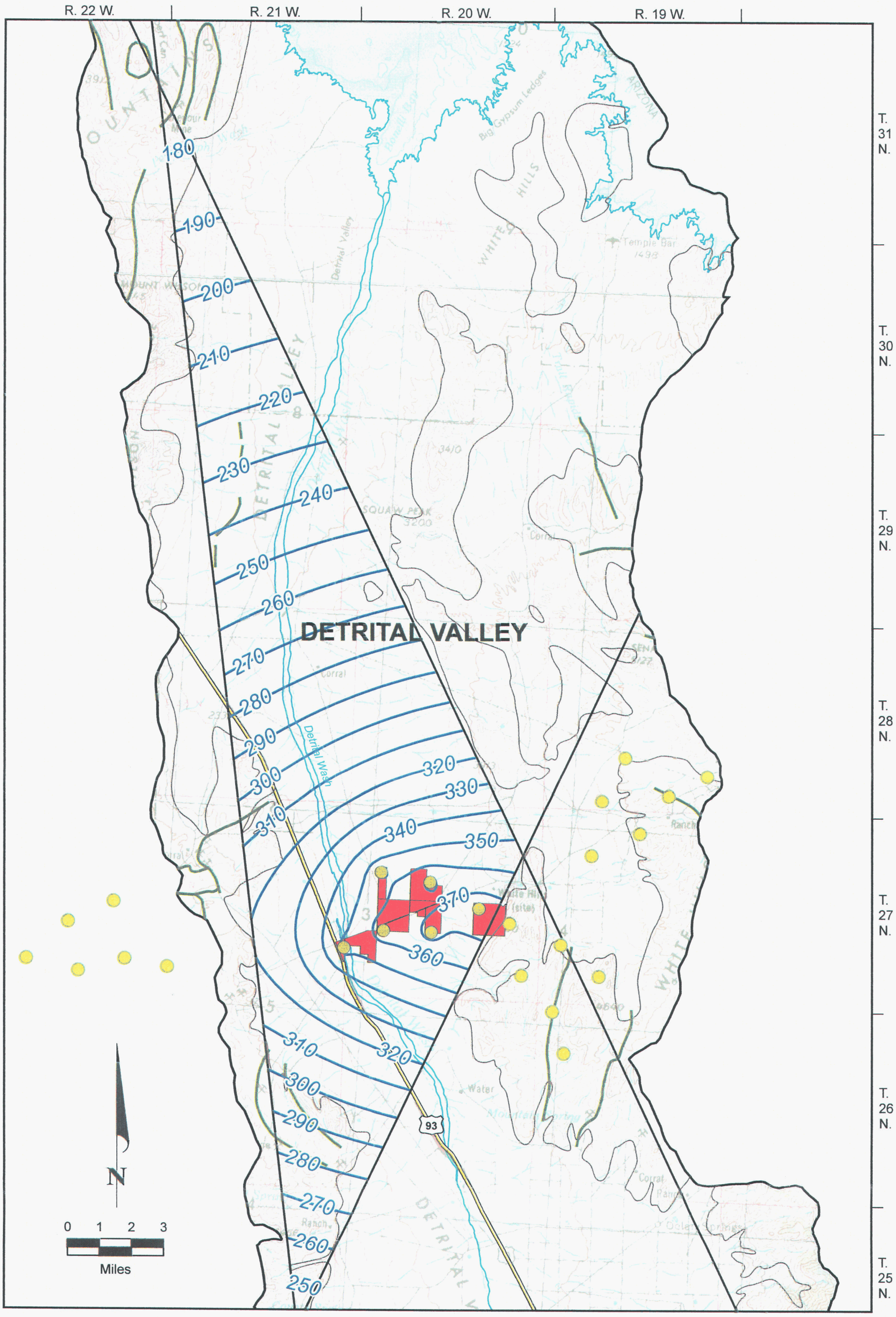


FIGURE 3. STIFF DIAGRAMS FOR UPPER BASIN-FILL DEPOSITS AQUIFER, DETRITAL BASIN

Water Quality Data Source:
Arizona Department of
Water Resources
Hydrologic Map Series
Report Number 14 (1987)

ERROL L. MONTGOMERY & ASSOCIATES, INC.



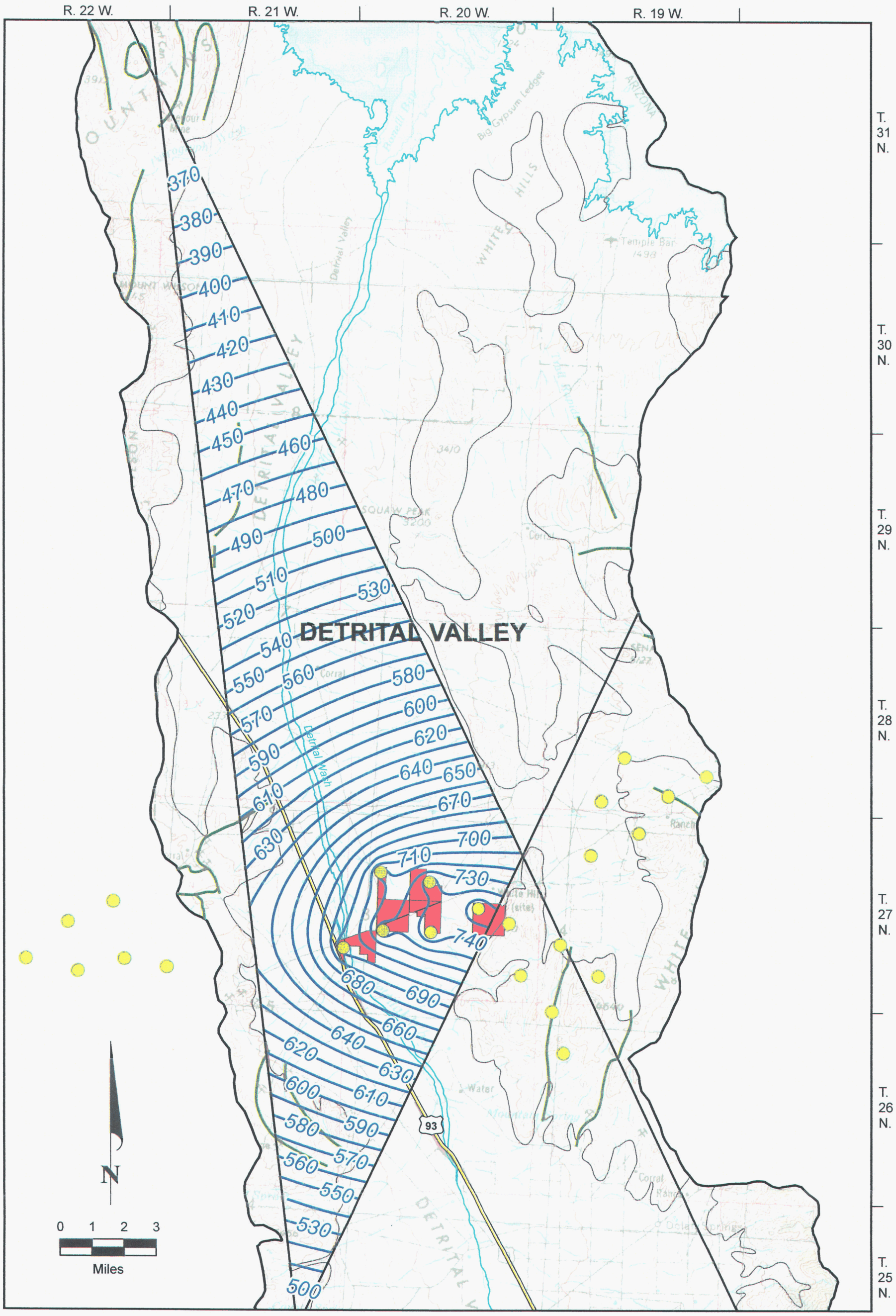
EXPLANATION

- Model Production Well
- Image Production Well
- Bedrock Boundary
- Fault
- Hydrologic Model Boundary
- 100-Year Drawdown Contour: 8,225 Acre-Feet Per Year Pumped
- The Villages at White Hills

FIGURE 4. PROJECTED GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY, AVERAGE ANNUAL TOTAL PUMPING RATE OF 8,225 ACRE-FEET PER YEAR

GISDATA\Projects\440\440.201\DetritalValley_Drawdown8225.mxd UTM NAD 27 16March2005

ERROL L. MONTGOMERY & ASSOCIATES, INC.



EXPLANATION

- Model Production Well
- Image Production Well
- Bedrock Boundary
- Fault
- Hydrologic Model Boundary
- 100-Year Drawdown Contour: 16,500 Acre-Feet Per Year Pumped
- The Villages at White Hills

FIGURE 5. PROJECTED GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY, AVERAGE ANNUAL TOTAL PUMPING RATE OF 16,500 ACRE-FEET PER YEAR

GISDATA\Projects\440\440.201\DetritalValley_Drawdown16500.mxd UTM NAD 27 16March2005

ERROL L. MONTGOMERY & ASSOCIATES, INC

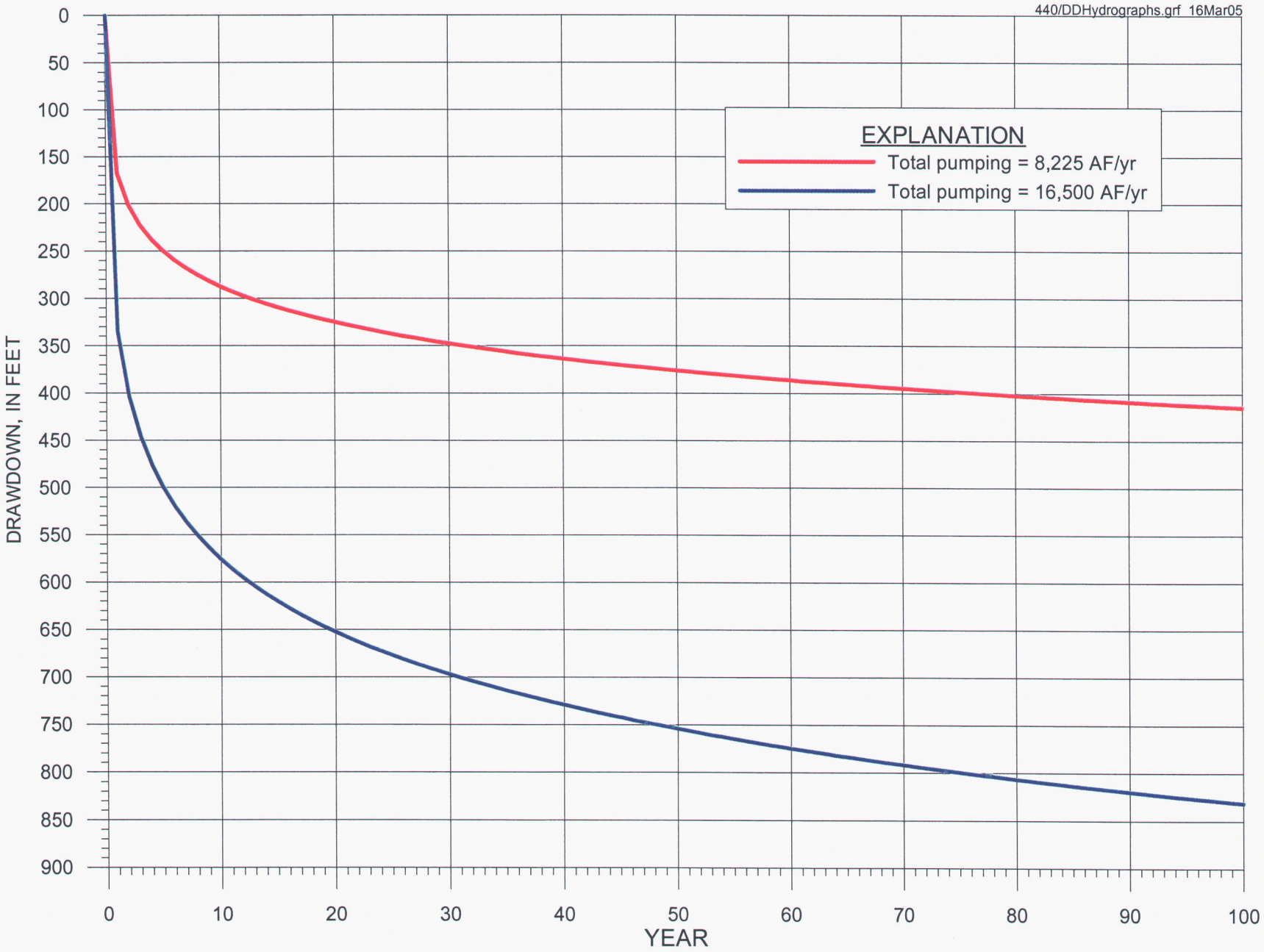


FIGURE 6. HYDROGRAPH OF GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY

ERROL L. MONTGOMERY & ASSOCIATES, INC.

ERROL L. MONTGOMERY & ASSOCIATES, INC.

APPENDIX A

WELL NUMBERING SYSTEM

APPENDIX A

WELL NUMBERING SYSTEM

The well numbers used in this report are in accordance with the Bureau of Land Management's system of land subdivision. The land survey in Arizona is based on the Gila and Salt River meridian and base line, which divide the state into four quadrants. These quadrants are designated, counter-clockwise, by the capital letters A, B, C, and D. All land north and east of the point of origin is in quadrant A; all land north and west of the origin is in quadrant B; all land south and west of the origin is in quadrant C; and all land south and east of the origin is in quadrant D. The first digit of a well number indicates the township, the second digit the range, and the third digit the section in which the well is located. The lowercase letters a, b, c, and d after the section number indicate the well location within the section. The first letter denotes a particular 160-acre tract or quarter section; the second letter denotes the 40-acre tract or quarter-quarter section; and the third letter denotes the 10-acre tract or quarter-quarter-quarter section. These letters are also assigned in a counter-clockwise direction, beginning in the northeast quarter. As shown on **Figure A-1**, well number (B-05-03)15aaa designates the well as being located in the Northeast ¼, Northeast ¼, Northeast ¼ of Section 15, Township 5 North, Range 3 West. Where more than one well is located within a 10-acre tract, consecutive numbers beginning with "1" may be added as suffixes.

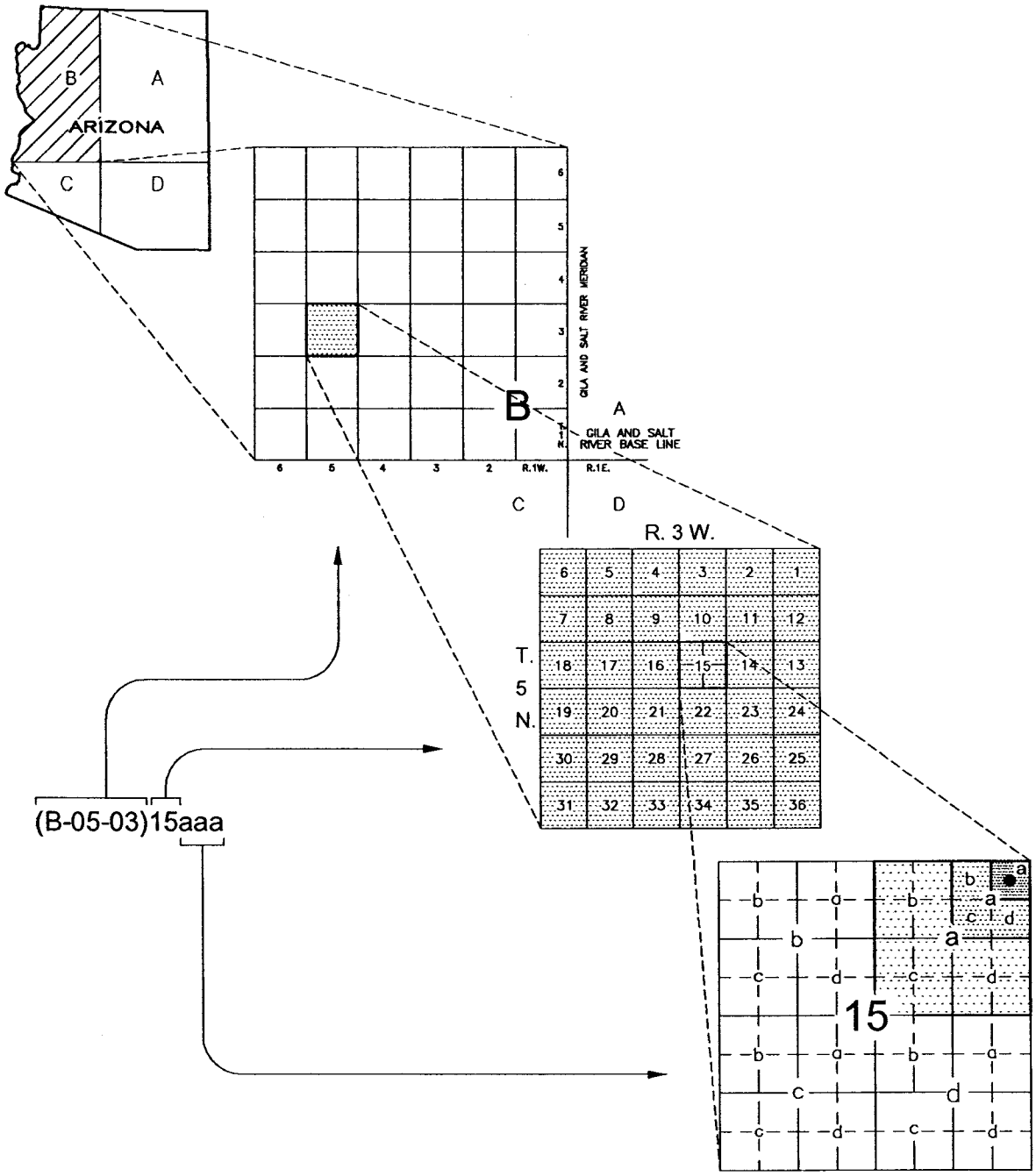


FIGURE A-1. WELL NUMBERING DIAGRAM

440\well numbering diagram\18Mar2005

ERROL L. MONTGOMERY & ASSOCIATES, INC.

APPENDIX B

SELECTED WELL RECORDS AND DRILLER'S LOGS FOR DEEP WELLS

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 • (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

RECEIVED FEB - 3 2003 RECORDS MGT

FILE NUMBER: B(27-20) 9 CCD
WELL REGISTRATION NUMBER: 55-594399
PERMIT NUMBER (IF ISSUED)

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: MARY VALADEZ
MAILING ADDRESS: 636 TYLER RIDGE AVE
CITY / STATE / ZIP: HENDERSON, NV 89012
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 702-683-0181
FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN): Golden Horseshoe Ranches Lot #149

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
27N	20W	9	SW 1/4	SW 1/4	SE 1/4

LATITUDE: 35° 44' 26" N
LONGITUDE: 114° 25' 47" W
LAND SURFACE ELEVATION AT WELL: 2589 Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☒ Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☒ GPS: ☐ Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 317 MAP 38 PARCEL 007B
COUNTY WHERE WELL IS LOCATED:

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: BROWN DRILLING
DWR LICENSE NUMBER: 400
TELEPHONE NUMBER: 928-757-1920
FAX:

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED: 11-21-2002
DATE WELL CONSTRUCTION COMPLETED: 11-25-2002
IF FLOWING WELL, METHOD OF FLOW REGULATION: ☐ Valve ☐ Other

Drill Method

CHECK ONE
- ☒ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Method of Sealing at Reduction Points

CHECK ONE
- ☐ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other (please specify)

Water Level Information

STATIC WATER LEVEL: 456' Feet Below Land Surface
DATE MEASURED: 11-25-2002

ANSWERED FEB - 5 2003

DWR-55-55-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 594399

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole			Installed Casing														
DEPTH FROM SURFACE		BOREHOLE DIAMETER (inches)	DEPTH FROM SURFACE		OUTER DIAMETER (inches)	MATERIAL TYPE (X)				PERFORATION TYPE (X)						SLOT SIZE IF ANY (inches)
FROM (feet)	TO (feet)		FROM (feet)	TO (feet)		STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	
0	20	12 1/4	+1	20'	8 5/8	X										
20	1365	7 7/8	+2	920'	6 5/8	X				X						
			920	960	6 5/8	X								X		1/4 x 6
			940	1265	5 1/2		X			X						
			1265	1365	5 1/2		X							X		1/8 x 6

Installed Annular Material											
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
					BENTONITE							
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	GROUT	CHIPS	PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	20			X								

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
1365	Feet Below Land Surface	1365	Feet Below Land Surface

DWR-55-55B-10/01 (Rev.)

ANSWERED FEB - 5 2003

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 594399

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	5	Sand + Gravel	
5	45	Reddish Tan clay	
45	330	Alluvium	
330	460	Sand & Gravel w/ some clay	
460	545	Alluvium w/ some large boulders	
680	715	Fault zone Green + Tan clay w 10% Gypsum	
715	815	S. A. A w/ 40% Gypsum	
815	960	S A A w/ 20% Gypsum	
960	1005	Red clay w/ Green clay nodules	
1005	1060	Lost circ (very rough Drilling)	
1060	1160	Quartzite	
1160	1225	Gypsum	
1225	1280	Green clay	
1280	1290	Gypsum	
1290	1315	Granite	
1315	1365	oxidized Granite w/ fractures	X

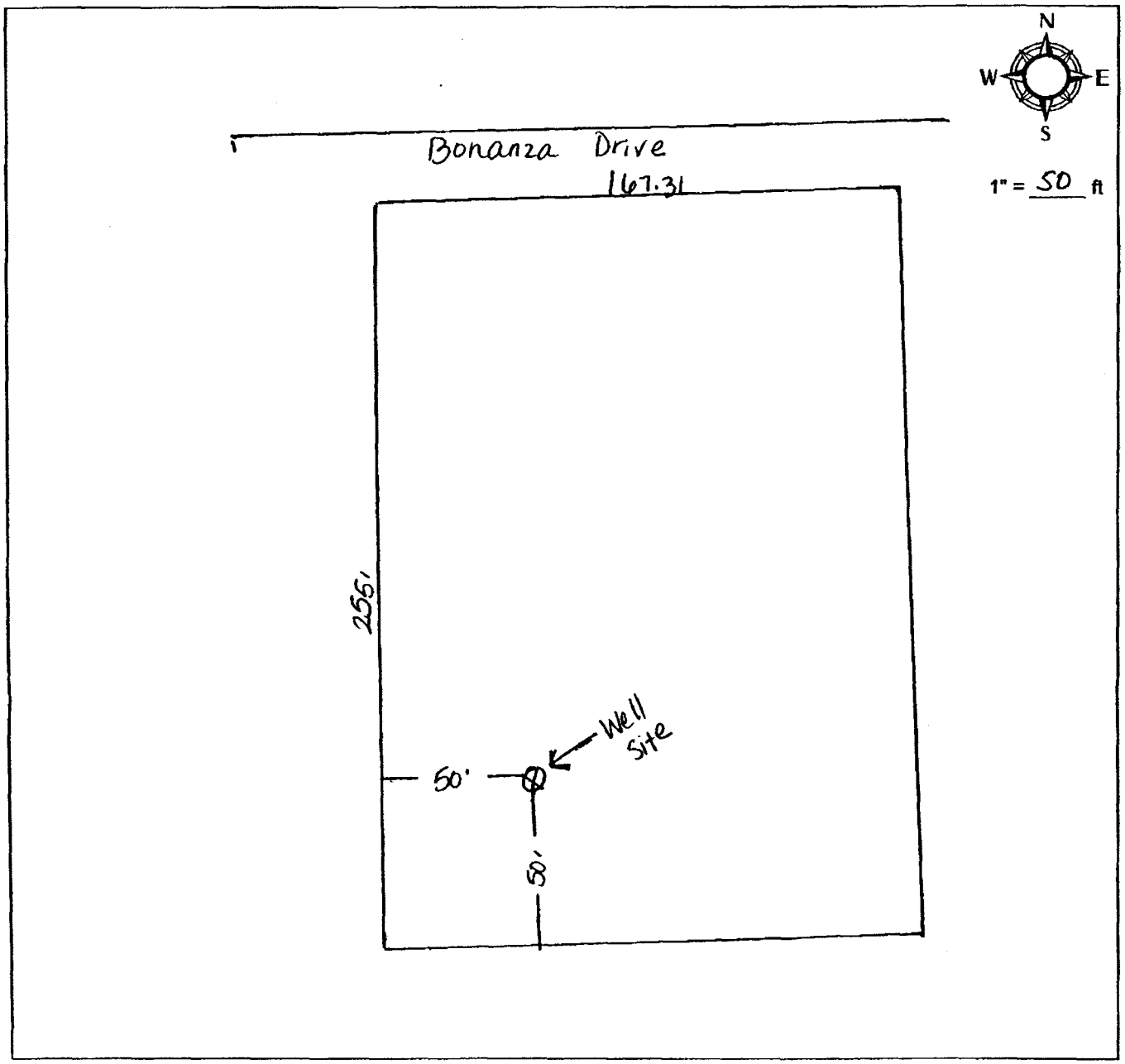
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 594399

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL
MARY VALADEZ	317	38	007B

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Brown Drilling #400	[signature]	01-27-2003

DWR-55-55 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street • Phoenix, Arizona 85004
(602) 417-2405 • (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

RECEIVED FEB 22 2005 Information Management

FILE NUMBER: B(27-20) 31 ADC
WELL REGISTRATION NUMBER: 55- 598603
PERMIT NUMBER (IF ISSUED):

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: SILVER BASIN INC
MAILING ADDRESS: 4132 S RAINBOW BLVD PMB 324
CITY / STATE / ZIP: LAS VEGAS, NV 89103
CONTACT PERSON NAME AND TITLE: Elvo Roundy / Agents
TELEPHONE NUMBER: 928-757-2818
FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
27N	20W	31	NE 1/4	SE 1/4	SW 1/4

LATITUDE: 35° 41' 09.2" N
LONGITUDE: 114° 27' 17.5" W
LAND SURFACE ELEVATION AT WELL: 2509 Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ Hand-Held ☒ USGS Quad Map ☐ Conventional Survey ☐ GPS: ☐ Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 317 MAP 45 PARCEL 057
COUNTY WHERE WELL IS LOCATED: Mohave

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: ADT DRILLING dba Advanced Drilling Technology, LLC
DWR LICENSE NUMBER: 671
TELEPHONE NUMBER: 480-471-1177
FAX: 480-471-1116

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED: 6-25-03
DATE WELL CONSTRUCTION COMPLETED:
IF FLOWING WELL, METHOD OF FLOW REGULATION: ☐ Valve ☐ Other

Drill Method

CHECK ONE
- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☒ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Water Level Information

STATIC WATER LEVEL: 460' Feet Below Land Surface
DATE MEASURED: 6-24-03

Method of Sealing at Reduction Points

CHECK ONE
- ☒ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other (please specify)

ENTERED FEB 22 2005

DWR-55-55-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 598603

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole			Installed Casing														
DEPTH FROM SURFACE		BOREHOLE DIAMETER (inches)	DEPTH FROM SURFACE		OUTER DIAMETER (inches)	MATERIAL TYPE (X)				PERFORATION TYPE (X)						SLOT SIZE IF ANY (inches)
FROM (feet)	TO (feet)		FROM (feet)	TO (feet)		STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	
0	20	9 7/8	0	640	6 5/8	X										
20	1175	6 5/8	525	546	6 5/8	X								X		125

Installed Annular Material											
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	20			X								

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
1175	Feet Below Land Surface	640'	Feet Below Land Surface

DWR-55-55B-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 598603

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	500	Alternating fine-medium-coarse sand	
500	546	sand and varying amounts of red clay	✓
546	590	Green clay	
590	640	Red clay	
640	670	Red + green clay	
670	810	Green-brown-red clay with gypsum	
810	1175	Claystone + mudstone	✓

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 598603

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL
SILVER BASIN INC	317	45	057

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.

N
W E
S

See Attached map

1" = _____ ft

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
ADT Drilling, Inc	Jay Chris	7-10-03

DWR-55-55 (Rev. 10/11/01)

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 -

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL
Silver Basin, Inc	317	45	057

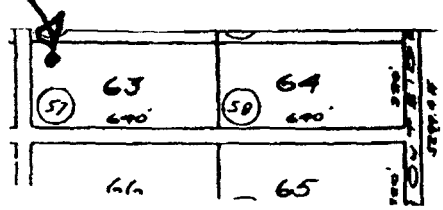
- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.

Flannery & Allen Tract
31-27-20

Lot 63 well 1

N W E S

1" = 640 ft



Proposed plan approved for Well Inspection.
4/5/03
Mohave County Health Department

* ∅ septic found

No Septic within 100'
NO STRUCTURES ON Property

MAY - 7 2003

COUNTY OR LOCAL AUTHORITY NAME AND TITLE		Official County or Local Seal or Stamp
COUNTY OR LOCAL AUTHORITY SIGNATURE		
TELEPHONE NUMBER	DATE	

Lot 63 well #1

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street • Phoenix, Arizona 85004
(602) 417-2405 • (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

RECEIVED FEB 22 2005 Information Management

FILE NUMBER: B(27-21) 25 ACA
WELL REGISTRATION NUMBER: 55-584114
PERMIT NUMBER (IF ISSUED):

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: ARIZONA LAND DEVELOPMENT INC
MAILING ADDRESS: 4132 S RAINBOW BLVD #324
CITY / STATE / ZIP: LAS VEGAS, NV 89103
CONTACT PERSON NAME AND TITLE: Elvo Roundy / Agent
TELEPHONE NUMBER: 928-757-2818
FAX: 928-757-5098

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
27N	21W	25	NE 1/4	SW 1/4	NE 1/4

LATITUDE: 35° 42' 8" N
LONGITUDE: 114° 28' 26" W
LAND SURFACE ELEVATION AT WELL: 2430 Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): [X] USGS Quad Map [ ] Conventional Survey [ ] GPS: [ ] Hand-Held [ ] Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 317 MAP 49 PARCEL 021
COUNTY WHERE WELL IS LOCATED: Mohave

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: ADT DRILLING dba Advanced Drilling Technology, LLC
DWR LICENSE NUMBER: 671
TELEPHONE NUMBER: 480-471-1177
FAX: 480-471-1116

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED:
DATE WELL CONSTRUCTION COMPLETED:
IF FLOWING WELL, METHOD OF FLOW REGULATION: [ ] Valve [ ] Other

Drill Method (CHECK ONE)

- [ ] Air Rotary
- [ ] Bored or Augered
- [ ] Cable Tool
- [X] Dual Rotary
- [ ] Mud Rotary
- [ ] Reverse Circulation
- [ ] Driven
- [ ] Jetted
- [ ] Air Percussion / Odex Tubing
- [ ] Other (please specify)

Method of Well Development (CHECK ONE)

- [X] Airlift
- [ ] Bail
- [ ] Surge Back
- [ ] Surge Pump
- [ ] Other (please specify)

Water Level Information

STATIC WATER LEVEL: 461 Feet Below Land Surface
DATE MEASURED: 6-15-04

Method of Sealing at Reduction Points (CHECK ONE)

- [X] None
- [ ] Packed
- [ ] Swedged
- [ ] Welded
- [ ] Other (please specify)

ENTERED FEB 22 2005

DWR-55-55-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 584114

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole			Installed Casing													
DEPTH FROM SURFACE		BOREHOLE DIAMETER (inches)	DEPTH FROM SURFACE		OUTER DIAMETER (inches)	MATERIAL TYPE (X)				PERFORATION TYPE (X)						SLOT SIZE IF ANY (inches)
FROM (feet)	TO (feet)		FROM (feet)	TO (feet)		STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	
(Deepen Existing well																
			0	875	8 5/8	X)										
875	1500'	6"	0	1080	6 5/8	X										

Installed Annular Material											
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
					BENTONITE							
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	GROUT	CHIPS	PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
(0	20			X					Existing cement seal)			

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
1500'	Feet Below Land Surface	1500'	Feet Below Land Surface

DWR-55-55B-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 584114

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
875	920	white + brown clay with minor sand	
920	1040	brown + green clay with gypsum	
1040	1320	massive gypsum layers	
1320	1378	red + green clay with gypsum	
1378	1500	Fanglomerate + volcanic flows	X

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 584114

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL
ARIZONA LAND DEVELOPMENT INC	317	49	021

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.

See Attached map

N
W E
S

1" = _____ ft

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
ADT Drilling, Inc.	Jay Clark	7-10-03

DWR-55-55 (Rev. 10/11/01)

55 -

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL SITE PLAN NAME OF WELL OWNER ARIZONA LAND Development, Inc	COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK 317	MAP 49	PARCEL 079

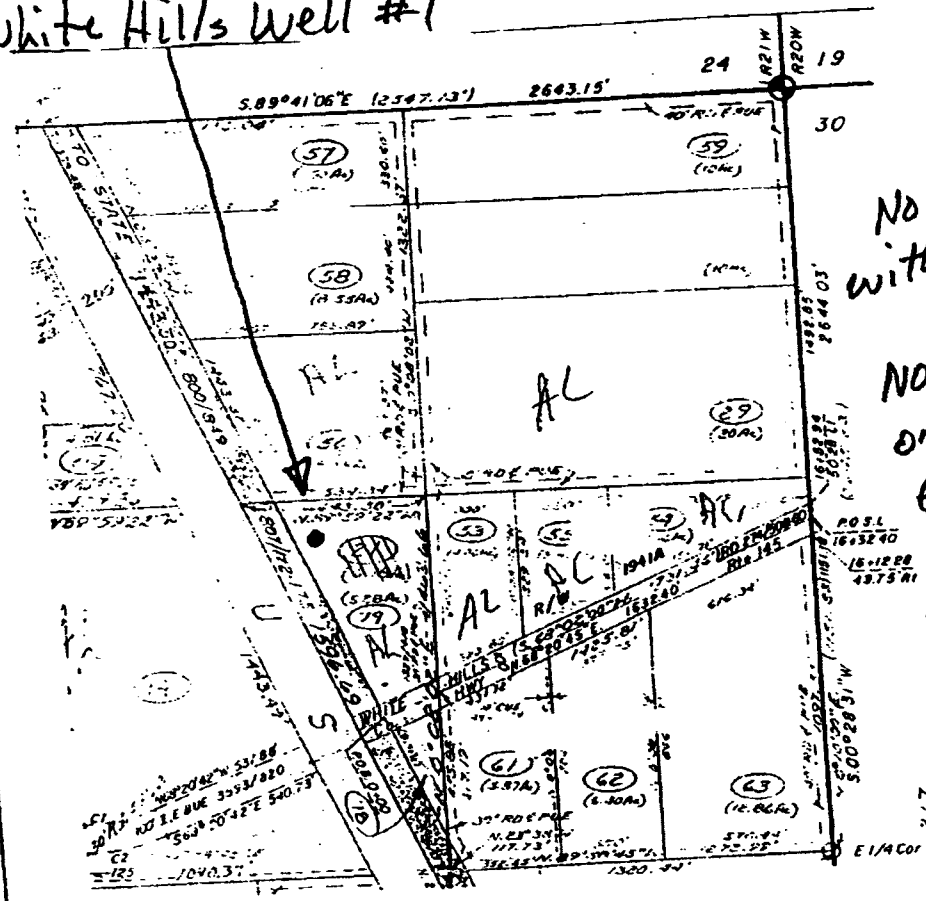
- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.

Proposed plan approved for ~~location only~~
5/5/03
Mohave County Health Department

N W E S

1" = 640 ft

White Hills Well #1



No septic within 100'

No structures on property except storage TANK + This well

COUNTY OR LOCAL AUTHORITY NAME AND TITLE		Official County or Local Seal or Stamp
COUNTY OR LOCAL AUTHORITY SIGNATURE		RECEIVED MAY 7 2003
TELEPHONE NUMBER	DATE	

White Hills well #1

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street
Phoenix, Arizona 85004

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

RECEIVED JUL - 6 2001 RECORDS MGT

1. DRILL-TECH, INC.
P.O. BOX 3568
CHINO VALLEY, AZ 86323-3568

2. Owner Name: Arizona Land Development Inc.
Address: 4132 S Rainbow blvd # 324 Las Vegas NV 89103
City State Zip

3. Location: 27 N N/S 21 W E/W 25 ¼ NE ¼ SW ¼ NE
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55-584114 (Required)

5. Permit No. _____ (If Issued)

DESCRIPTION OF WELL

6. Total depth of hole 870 ft.
7. Type of casing 12" steel & 8" steel
8. Diameter and length of casing 12" in. from 0 to 20 , 8" in from 4 to 870'
9. Method of sealing at reduction points _____
10. Perforated from 510 to 590 , from 810 to 850' from _____ to _____
11. Size of cuts factory Number of cuts per foot _____
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction Drilled
(drilled, dug, driven, bored, jetted, etc)
14. Date started 4-16-01
Month Day Year
15. Date completed 5-5-01
Month Day Year
16. Depth to water 420' ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea_level elevation if available
_____
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55- 584114
File No. B(27-21) 25 ACA
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

ANSWERED JUL 0 9 2001

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	430	Clay, sand, gravel
430	535	Large gravel
535	870	white clay
		100 gpm @ 320'

I hereby certify that this well was drilled by me (or under by supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: DRILL-TECH, INC.

P.O. BOX 3568
Street

CHINO VALLEY, AZ 86323-3568
City State Zip Phone No.

Signature of Driller Date 7-1-01

RALPH McGRAF

RECEIVED OCT 25 2000 GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ (602)417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. ARIZONA LAND DEVELOPMENT INC. 4132 S. RAINBOW BLVD #324 LAS VEGAS, NV 89103
LANDOWNER'S NAME — CURRENT MAILING ADDRESS — CITY — STATE — ZIP

B. TELEPHONE NO. 702 499-1010 — COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN MOHAVE COUNTY — D. 317 (BOOK) - 49 (MAP) - 021 (PARCEL) — E. 6.18 (# OF ACRES) — OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):
NE ¼ (10AC) SW ¼ (40AC) NE ¼ (160AC) OF SECTION 25 TOWNSHIP 27 (N/S) RANGE 21 (E/W)

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL X ; INSUFFICIENT INFORMATION TO MAKE DETERMINATION ___ ; VARIANCE REQUIRED ___ (EXPLANATION ATTACHED)
H. DATE 10/23/00 AUTHORIZED SIGNATURE [signature] TITLE R.S.

1. OWNER OF WELL
NAME: AZ. LAND DEVELOPMENT INC.
CURRENT MAILING ADDRESS: 4132 S. RAINBOW BLVD #324
CITY: LAS VEGAS STATE: NV. ZIP: 89103
TELEPHONE NUMBER: 702 499-1010

2. ACTION REQUESTED:
DRILL NEW WELL: X DEEPEN ___
MODIFY ___ REPLACE ___

WELL REGISTRATION NO 55- ___

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL: N/A GALLONS PER MINUTE;

DISTANCE FROM THE ORIGINAL WELL: N/A FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH JAN YEAR 2001.

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING:
DIAMETER: 10 IN DEPTH: 20'.

DOWNHOLE CASING:
DIAMETER: 6" DEPTH: APP 600

5. DESIGN PUMP CAPACITY.
40 TO 80 GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
OWNER
NAME: SAME
CURRENT MAILING ADDRESS: SAME
CITY ___ STATE ___ ZIP ___
TELEPHONE: SAME

7. PRINCIPLE USE OF WATER: (BE SPECIFIC)
STORE, STATION, OFFICE, RESTAURANT

8. OTHER USES OF WATER: (BE SPECIFIC)
MOTEL, RV PARK, RANGE

9. IF USE INCLUDES IRRIGATION, STATE TO NEAREST TENTH, THE NUMBER OF ACRES TO BE IRRIGATED: NONE

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55- 584114
DATE FILED 10-25-00
FILE NO. B(27-21)25 ACA
AMA/INA ___
W/S 02 S/B ___
PROCESSED BY SO
DATE MAILED 11-6-00
no.

10. PLACE OF USE: (LEGAL DESCRIPTION OF LAND)
NE ¼ SW ¼ NE ¼ SECTION 25
10AC 40AC 160AC
TWNSHP 27 N/S RNG 21 E/W
ARD per applicant 11/1/00

11. TYPE OF WELL (CHECK ONE)
EXEMPT ___ NON EXEMPT X

12. CHECK ONE:
RESIDENTIAL ___ COMMERCIAL X

13. IS THE PROPOSED WELL SITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES ___ NO X

14. DRILLING FIRM:
NAME: Brown Drilling
MAILING ADDRESS: 3545 E. Gordon Dr
CITY: Kingman STATE: Az. ZIP: 86401
TELEPHONE NO. 520 753-5858
DWR LICENSE NUMBER 400
ROC LICENSE CATEGORY ___

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

LEONARD MARGIAN PRESIDENT — 15. TYPE OR PRINT NAME AND TITLE
X [signature] its PRESIDENT — 14. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE — 17. DATE 10/22/00
ARIZONA LAND DEVELOPMENT INC.

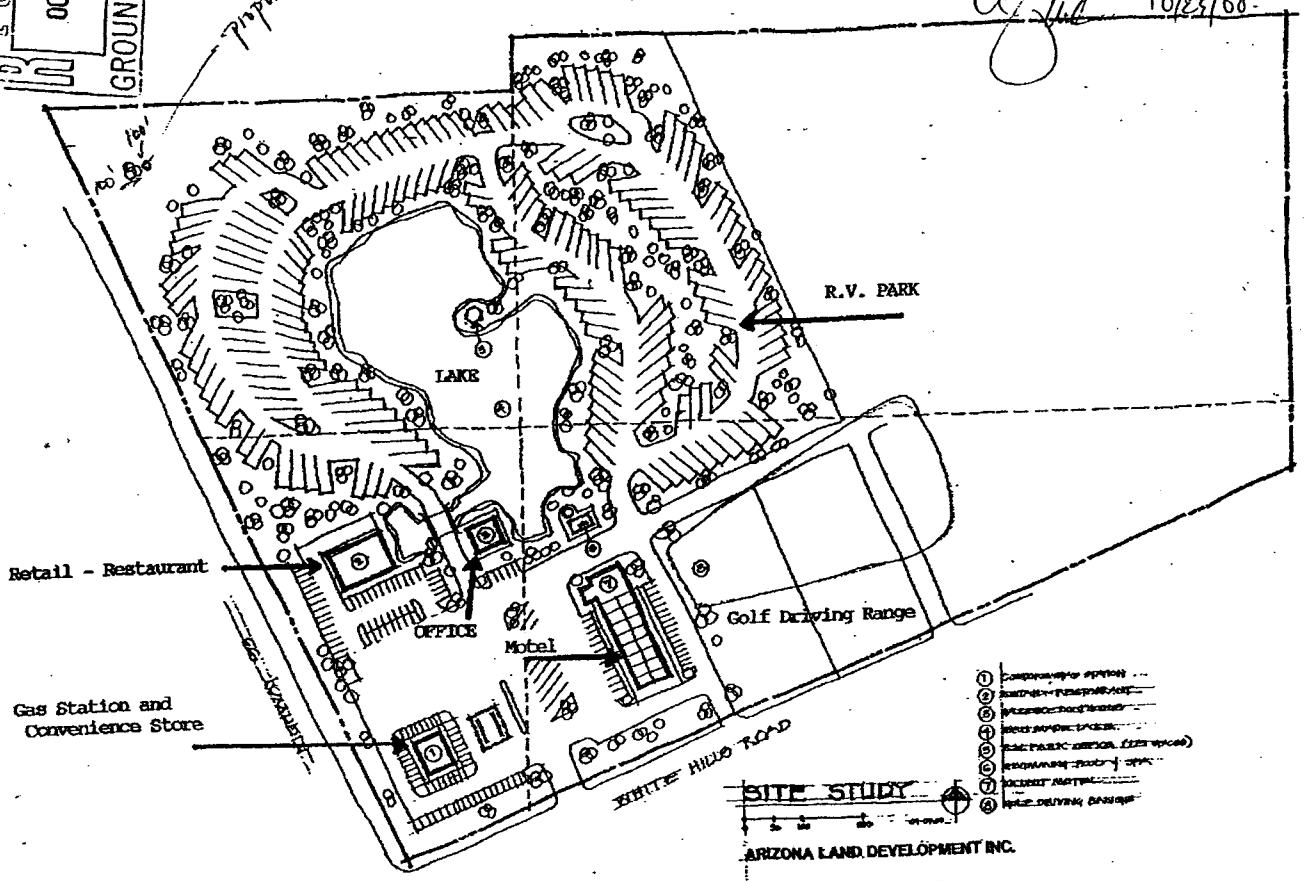
DWR 55-40 (REV 1/99)

RECEIVED
OCT 25 2000
GROUNDWATER MGT

APR 22 '00 19:33 886 P02 7025520832 HK-INVESTMENTS

Proposed well site

Proposed plan approved for
Well location as proposed.
Mohave County Health Department
10/25/00



Rhodes Homes Exploration Well WH-1

Cadastral location:	(B-27-21) 25 ADC
ADWR Registration Number:	55-901788
Latitude:	35 deg, 41 min, 57.96 sec
Longitude:	114 deg, 28 min, 18.72 sec

Well construction details:

8-inch borehole and 8-inch casing to 868 feet bls.
7-7/8-inch borehole to 1205 feet
6-inch casing set from 858 to 1425 feet
6-inch open borehole from 1425 to 2008 feet.

Summary lithologic log:

0 - 40	Fine to coarse sand w/ some gravel and clay, abundant volcanic fragments
40 - 190	Silty sand with some thing gravel interbeds
190 - 315	Silty sandy gravel
315 - 505	Sandy gravel
505 - 585	Silty clay, clay, claystone, some gypsum
585 - 865	Silty clay w/ abundant gypsum
865 - 1,015	Dense clay
1,015 - 1,145	Silty claystone w/ some gypsum
1,145 - 1,295	Gypsum, often massive and crystalline
1,295 - 1,350	Soft clay with some gypsum
1,350 - 1,355	Thin bed of gravel
1,355 - 1,365	Soft brown silty clay with gypsum
1,365 - 1,385	Silty sand and gravel, well cemented
1,385 - 1,395	Silty, clayey sandstone and conglomerate, well cemented
1,395 - 1,405	Silty, sandy claystone, some gravel and conglomerate, well cemented
1,405 - 1,725	Conglomerate, (quartz, gneiss, schist, granitic rocks) very well cemented
1,725 - 2,008 (TD)	Conglomerate, similar to above but with abundant volcanic fragments

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

RECEIVED FEB 17 2005 Information Management

Well Driller Report and Well Log

FILE NUMBER: B(28-19) 29 DCC
WELL REGISTRATION NUMBER: 55- 204338
PERMIT NUMBER (IF ISSUED):

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: ARIZONA ACREAGE LLC
MAILING ADDRESS: 4132 S RAINBOW BLVD PMB 324
CITY / STATE / ZIP: LAS VEGAS, NV 89103
CONTACT PERSON NAME AND TITLE: Elno Roundy / Agent
TELEPHONE NUMBER: 928-757-2818
FAX: 928-757-5098

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
28N	19W	29	SE 1/4	SW 1/4	SW 1/4

LATITUDE: 35° 46' 49A "N
LONGITUDE: 114° 20' 58 "W
LAND SURFACE ELEVATION AT WELL: 3800 Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): [X] USGS Quad Map [ ] Conventional Survey [ ] GPS: [ ] Hand-Held [ ] Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 337 MAP 10 PARCEL 134
COUNTY WHERE WELL IS LOCATED: Mohave

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: ADT DRILLING dba Advanced Drilling Technology, LLC
DWR LICENSE NUMBER: 671
TELEPHONE NUMBER: 877-374-5464
FAX: 480-471-1116

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED:
DATE WELL CONSTRUCTION COMPLETED:
IF FLOWING WELL, METHOD OF FLOW REGULATION: [ ] Valve [ ] Other

Drill Method

CHECK ONE
- [ ] Air Rotary
- [ ] Bored or Augered
- [ ] Cable Tool
- [X] Dual Rotary
- [ ] Mud Rotary
- [ ] Reverse Circulation
- [ ] Driven
- [ ] Jetted
- [ ] Air Percussion / Odex Tubing
- [ ] Other (please specify)

Method of Well Development

CHECK ONE
- [X] Airlift
- [ ] Bail
- [ ] Surge Back
- [ ] Surge Pump
- [ ] Other (please specify)

Water Level Information

STATIC WATER LEVEL: 799 Feet Below Land Surface
DATE MEASURED: 2/-05

Method of Sealing at Reduction Points

CHECK ONE
- [X] None
- [ ] Packed
- [ ] Swedged
- [ ] Welded
- [ ] Other (please specify)

ENTERED FEB 18 2005

DWR-55-55-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 204338

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole			Installed Casing														
DEPTH FROM SURFACE		BOREHOLE DIAMETER (inches)	DEPTH FROM SURFACE		OUTER DIAMETER (inches)	MATERIAL TYPE (X)				PERFORATION TYPE (X)						SLOT SIZE IF ANY (inches)
FROM (feet)	TO (feet)		FROM (feet)	TO (feet)		STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	
0	20	9 7/8	0	1130	6 5/8	X										
			1000'	1120	6 5/8	X								X		

Installed Annular Material											
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
						BENTONITE						
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	GROUT	CHIPS	PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	20			X								

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
1160'	Feet Below Land Surface	1130'	Feet Below Land Surface

DWR-55-55B-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 204338

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	250	Medium To coarse gravel, moderately cemented	
		w/caliche - fanglomerate	
250	300'	coarse gravel and boulders	
300	1000	sand + fine gravel	X
1000	1160	sand	X

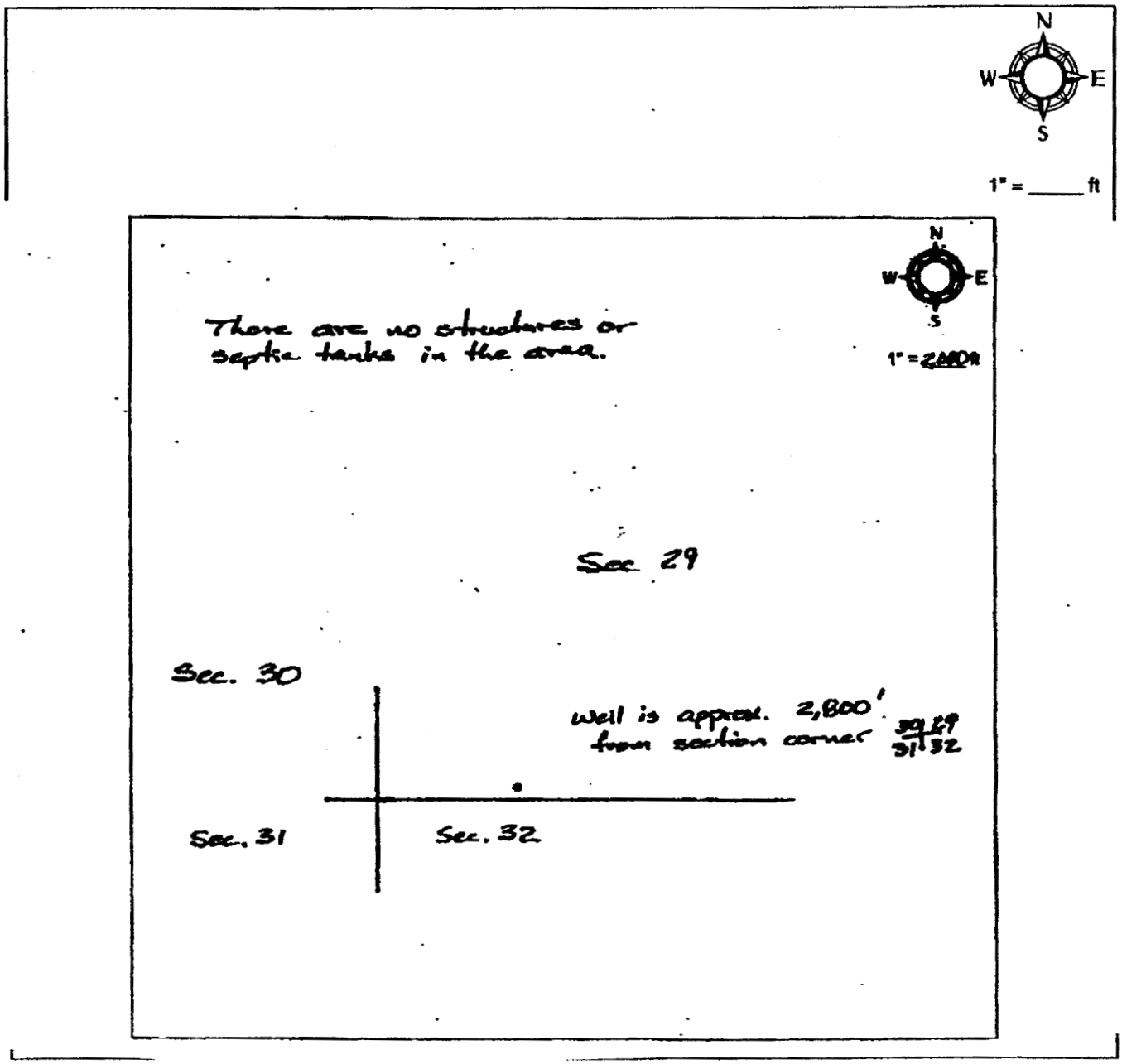
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 204338

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL
ARIZONA ACREAGE LLC	337	10	134

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



I state that this notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
ADT Drilling Inc	Jay Clark	2-1-05

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street • Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

RECEIVED FEB 17 2005 Information Management

FILE NUMBER: B(28-19) 31 AAA
WELL REGISTRATION NUMBER: 55- 204337
PERMIT NUMBER (IF ISSUED):

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: ARIZONA ACREAGE LLC
MAILING ADDRESS: 4132 S RAINBOW BLVD PMB 324
CITY / STATE / ZIP: LAS VEGAS, NV 89103
CONTACT PERSON NAME AND TITLE: Elvo Roundy / Agent
TELEPHONE NUMBER: 928-757-2818
FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
28N	19W	31	NE 1/4	NE 1/4	NE 1/4

LATITUDE: 35° 46' 40.7" N
LONGITUDE: 114° 20' 49.8" W
LAND SURFACE ELEVATION AT WELL: 3640 Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): [X] USGS Quad Map [ ] Conventional Survey [ ] GPS : [ ] Hand-Held [ ] Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 337 MAP 10 PARCEL 013
COUNTY WHERE WELL IS LOCATED: Mohave

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: ADT DRILLING dba Advanced Drilling Technology, LLC
DWR LICENSE NUMBER: 671
TELEPHONE NUMBER: 877-374-5464
FAX: 480-471-1116

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED:
DATE WELL CONSTRUCTION COMPLETED:
IF FLOWING WELL, METHOD OF FLOW REGULATION: [ ] Valve [ ] Other

Drill Method

CHECK ONE
- [ ] Air Rotary
- [ ] Bored or Augered
- [ ] Cable Tool
- [X] Dual Rotary
- [ ] Mud Rotary
- [ ] Reverse Circulation
- [ ] Driven
- [ ] Jetted
- [ ] Air Percussion / Odex Tubing
- [ ] Other (please specify)

Method of Well Development

CHECK ONE
- [X] Airlift
- [ ] Bail
- [ ] Surge Back
- [ ] Surge Pump
- [ ] Other (please specify)

Water Level Information

STATIC WATER LEVEL: 622 Feet Below Land Surface
DATE MEASURED: 2-1-05

Method of Sealing at Reduction Points

CHECK ONE
- [X] None
- [ ] Packed
- [ ] Swedged
- [ ] Welded
- [ ] Other (please specify)

ENTERED FEB 18 2005

DWR-55-55-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 204337

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole			Installed Casing													
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (X)				PERFORATION TYPE (X)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20'	9 7/8	0	920	6 5/8	X										
			820	920	6 5/8	X								X		.125

Installed Annular Material											
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
						BENTONITE						
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	GROUT	CHIPS	PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	20			X								

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
960	Feet Below Land Surface	920	Feet Below Land Surface

DWR-55-55B-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 204337

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	200'	Gravel + sand	
200'	780'	Gravel + sand with carbonate matrix	
780'	800'	Coarse gravel	X
800'	960'	Medium to fine sand	X

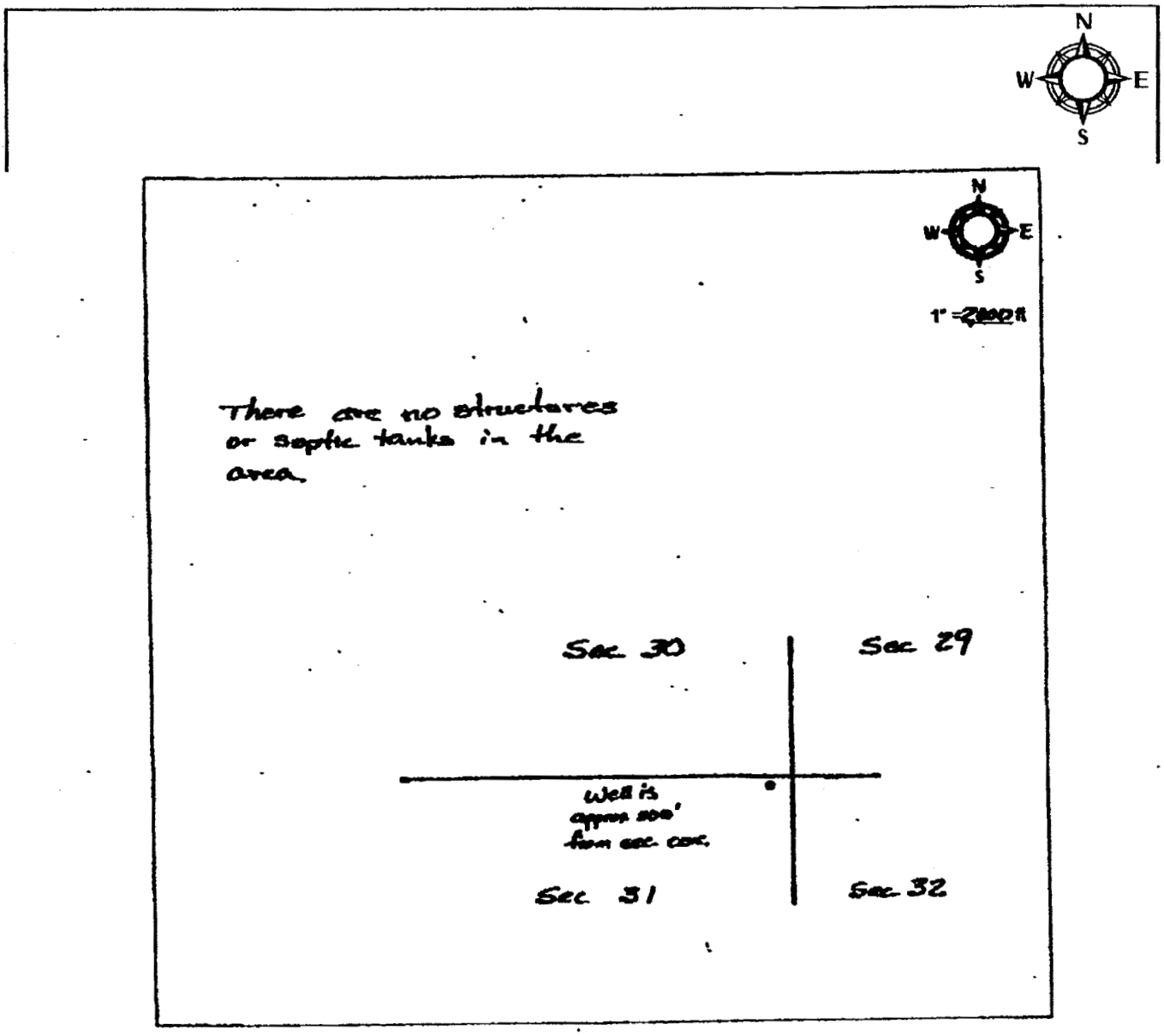
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 204337

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL
ARIZONA ACREAGE LLC	337	10	013

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



I state that this notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
ADT Drilling, Inc.	Jay Clark	2-1-05

DWR 55-55 (Rev. 10/14/04)

ERROL L. MONTGOMERY & ASSOCIATES, INC.

APPENDIX C

ANALYTICAL MODEL

THWELLS PUMPING RATES, AND
PUMPING AND IMAGE WELL LOCATIONS

TABLE C-1. MODEL WELL LOCATIONS AND PUMPING RATES FOR WATER DEMAND OF 8,225 ACRE-FEET PER YEAR

WELL TYPE	X COORDINATE (UTM, meters) [a]	Y COORDINATE (UTM, meters) [a]	X COORDINATE (UTM, feet) [b]	Y COORDINATE (UTM, feet) [b]	X COORDINATE (feet) [c]	Y COORDINATE (feet) [c]	MODEL PUMPING RATE (gpm) [d]	MODEL PUMPING RATE (gpd) [e]	Drawdown (feet)
Pumping Well 1	187935.782979	3959596.80554	616,585.354870993	12,990,763.9875198	58,375.3549	30,063.9875	850	1,224,000	395.053
Pumping Well 2	190384.212427	3959103.17057	624,618.235656874	12,989,144.4551012	66,408.2357	28,444.4551	850	1,224,000	406.624
Pumping Well 3	190443.448623	3956575.75952	624,812.579545797	12,980,852.4491060	66,602.5795	20,152.4491	850	1,224,000	409.852
Pumping Well 4	192852.387274	3957760.48345	632,715.897740157	12,984,739.3269173	74,505.8977	24,039.3269	850	1,224,000	414.382
Pumping Well 5	188034.509973	3956654.74112	616,909.261354718	12,981,111.5743087	58,699.2614	20,411.5743	850	1,224,000	401.739
Pumping Well 6	186040.224697	3955785.94357	610,366.350392658	12,978,261.1972428	52,156.3504	17,561.1972	850	1,224,000	388.490
Image Well E1	198928.630314	3954349.55308	652,651.018193081	12,973,548.6442315	94,441.0182	12,848.6442	850	1,224,000	---
Image Well E2	197005.085680	3955942.80707	646,340.195251514	12,978,775.8397195	88,130.1953	18,075.8397	850	1,224,000	---
Image Well E3	195002.739905	3954399.45782	639,770.839162521	12,973,712.3731996	81,560.8392	13,012.3732	850	1,224,000	---
Image Well E4	194408.975022	3957017.47223	637,822.797521428	12,982,301.6334164	79,612.7975	21,601.6334	850	1,224,000	---
Image Well E5	196579.051822	3952576.14648	644,942.450589172	12,967,730.3986560	86,732.4506	7,030.3987	850	1,224,000	---
Image Well E6	197157.691519	3950479.20608	646,840.869066281	12,960,850.6936834	88,630.8691	150.6937	850	1,224,000	---
Image Well NE1	200259.178863	3965414.02744	657,016.321789096	13,009,849.3036460	98,806.3218	49,149.3036	850	1,224,000	---
Image Well NE2	199084.188012	3963209.96783	653,161.376555410	13,002,618.1587557	94,951.3766	41,918.1588	850	1,224,000	---
Image Well NE3	200997.847299	3961557.93162	659,439.767353978	12,997,198.1087968	101,229.7674	36,498.1088	850	1,224,000	---
Image Well NE4	198552.165118	3960451.04641	651,415.899884088	12,993,566.6065933	93,205.8999	32,866.6066	850	1,224,000	---
Image Well NE5	202467.875980	3963467.96806	664,262.681551463	13,003,464.6136503	106,052.6816	42,764.6137	850	1,224,000	---
Image Well NE6	204406.110790	3964455.50477	670,621.700463156	13,006,704.5537146	112,411.7005	46,004.5537	850	1,224,000	---
Image Well W1	174534.387686	3958101.89924	572,617.655151859	12,985,859.4540836	14,407.6552	25,159.4541	850	1,224,000	---
Image Well W2	172254.916423	3957080.87377	565,139.097448071	12,982,509.6430908	6,929.0974	21,809.6431	850	1,224,000	---
Image Well W3	172754.064475	3954602.53426	566,776.717351514	12,974,378.6324762	8,566.7174	13,678.6325	850	1,224,000	---
Image Well W4	170143.278178	3955227.31511	558,211.171344728	12,976,428.4322323	1.1713	15,728.4322	850	1,224,000	---
Image Well W5	175086.386669	3955210.39666	574,428.669975255	12,976,372.9256740	16,218.6700	15,672.9257	850	1,224,000	---
Image Well W6	177223.095873	3954802.40558	581,438.849633015	12,975,034.3762990	23,228.8496	14,334.3763	850	1,224,000	---

[a] UTM, meters = Universal Transverse Mercator coordinates, in meters
[b] UTM, feet = UTM coordinates, converted to feet
[c] Coordinate in feet from origin
[d] gpm = Gallons per minute
[e] gpd = Gallons per day

T = 42,000 gpd/ft
S = 0.001
b = 600 feet
Confined Aquifer, English units
time = 100 years = 36525 days

TABLE C-2. MODEL WELL LOCATIONS AND PUMPING RATES FOR WATER DEMAND OF 16,500 ACRE-FEET PER YEAR

WELL TYPE	X COORDINATE (UTM, meters) [a]	Y COORDINATE (UTM, meters) [a]	X COORDINATE (UTM, feet) [b]	Y COORDINATE (UTM, feet) [b]	X COORDINATE (feet) [c]	Y COORDINATE (feet) [c]	MODEL PUMPING RATE (gpm) [d]	MODEL PUMPING RATE (gpd) [e]	Drawdown (feet)
TARTESSO NORTH WELLS									
Pumping Well 1	187935.782979	3959596.80554	616,585.354870993	12,990,763.9875198	58,375.3549	30,063.9875	1704.89	2,455,042	792.380
Pumping Well 2	190384.212427	3959103.17057	624,618.235656874	12,989,144.4551012	66,408.2357	28,444.4551	1704.89	2,455,042	815.588
Pumping Well 3	190443.448623	3956575.75952	624,812.579545797	12,980,852.4491060	66,602.5795	20,152.4491	1704.89	2,455,042	822.061
Pumping Well 4	192852.387274	3957760.48345	632,715.897740157	12,984,739.3269173	74,505.8977	24,039.3269	1704.89	2,455,042	831.148
Pumping Well 5	188034.509973	3956654.74112	616,909.261354718	12,981,111.5743087	58,699.2614	20,411.5743	1704.89	2,455,042	805.789
Pumping Well 6	186040.224697	3955785.94357	610,366.350392658	12,978,261.1972428	52,156.3504	17,561.1972	1704.89	2,455,042	779.215
Image Well E1	198928.630314	3954349.55308	652,651.018193081	12,973,548.6442315	94,441.0182	12,848.6442	1704.89	2,455,042	---
Image Well E2	197005.085680	3955942.80707	646,340.195251514	12,978,775.8397195	88,130.1953	18,075.8397	1704.89	2,455,042	---
Image Well E3	195002.739905	3954399.45782	639,770.839162521	12,973,712.3731996	81,560.8392	13,012.3732	1704.89	2,455,042	---
Image Well E4	194408.975022	3957017.47223	637,822.797521428	12,982,301.6334164	79,612.7975	21,601.6334	1704.89	2,455,042	---
Image Well E5	196579.051822	3952576.14648	644,942.450589172	12,967,730.3986560	86,732.4506	7,030.3987	1704.89	2,455,042	---
Image Well E6	197157.691519	3950479.20608	646,840.869066281	12,960,850.6936834	88,630.8691	150.6937	1704.89	2,455,042	---
Image Well NE1	200259.178863	3965414.02744	657,016.321789096	13,009,849.3036460	98,806.3218	49,149.3036	1704.89	2,455,042	---
Image Well NE2	199084.188012	3963209.96783	653,161.376555410	13,002,618.1587557	94,951.3766	41,918.1588	1704.89	2,455,042	---
Image Well NE3	200997.847299	3961557.93162	659,439.767353978	12,997,198.1087968	101,229.7674	36,498.1088	1704.89	2,455,042	---
Image Well NE4	198552.165118	3960451.04641	651,415.899884088	12,993,566.6065933	93,205.8999	32,866.6066	1704.89	2,455,042	---
Image Well NE5	202467.875980	3963467.96806	664,262.681551463	13,003,464.6136503	106,052.6816	42,764.6137	1704.89	2,455,042	---
Image Well NE6	204406.110790	3964455.50477	670,621.700463156	13,006,704.5537146	112,411.7005	46,004.5537	1704.89	2,455,042	---
Image Well W1	174534.387686	3958101.89924	572,617.655151859	12,985,859.4540836	14,407.6552	25,159.4541	1704.89	2,455,042	---
Image Well W2	172254.916423	3957080.87377	565,139.097448071	12,982,509.6430908	6,929.0974	21,809.6431	1704.89	2,455,042	---
Image Well W3	172754.064475	3954602.53426	566,776.717351514	12,974,378.6324762	8,566.7174	13,678.6325	1704.89	2,455,042	---
Image Well W4	170143.278178	3955227.31511	558,211.171344728	12,976,428.4322323	1.1713	15,728.4322	1704.89	2,455,042	---
Image Well W5	175086.386669	3955210.39666	574,428.669975255	12,976,372.9256740	16,218.6700	15,672.9257	1704.89	2,455,042	---
Image Well W6	177223.095873	3954802.40558	581,438.849633015	12,975,034.3762990	23,228.8496	14,334.3763	1704.89	2,455,042	---

[a] UTM, meters = Universal Transverse Mercator coordinates, in meters
[b] UTM, feet = UTM coordinates, converted to feet
[c] Coordinate in feet from origin
[d] gpm = Gallons per minute
[e] gpd = Gallons per day

T = 42,000 gpd/ft
S = 0.001
b = 600 feet
Confined Aquifer, English units
time = 100 years = 36525 days

May 2005

ADDENDUM TO

REGIONAL HYDROGEOLOGY, SOURCE OF WATER SUPPLY, AND PROJECTED 100-YEAR DRAWDOWN IMPACTS IN THE VICINITY OF THE VILLAGES AT WHITE HILLS MOJAVE COUNTY, ARIZONA

Prepared for:

RHODES HOMES – ARIZONA LLC

REGISTERED GEOLOGIST
CERTIFICATE NO.
19807
WILLIAM R.
VICTOR
5-10-05
ARIZONA U.S.A.

William R. Victor

Prepared by:

ERROL L. MONTGOMERY & ASSOCIATES, INC.
CONSULTANTS IN HYDROGEOLOGY

7949 EAST ACOMA DRIVE, SUITE 100
SCOTTSDALE, ARIZONA 85260 (480) 948-7747

TUCSON • PHOENIX • FLAGSTAFF • SANTIAGO de CHILE

A-21
Admitted

ERROL L. MONTGOMERY & ASSOCIATES, INC.
CONSULTANTS IN HYDROGEOLOGY

7949 EAST ACOMA DRIVE, SUITE 100
SCOTTSDALE, ARIZONA 85260 (480) 948-7747
FAX: (480) 948-8737
www.elmontgomery.com
E-MAIL: info@elmontgomery.com

ERROL L. MONTGOMERY, P.G.
WILLIAM R. VICTOR, P.G.
RONALD H. DEWITT, P.G.
MARK M. CROSS, P.G.
DENNIS G. HALL, P.G.
TODD KEAY, P.G.
JAMES S. DAVIS, P.G.
MICHAEL J. ROSKO, P.G.
CHARLES F. BARTER, P.G. (1937-1999)
DANIEL S. WEBER, P.G.
LESLIE T. KATZ, P.G.
DENNIS H. SHIRLEY, P.G.

May 10, 2005

Mr. Doug Dunham
ARIZONA DEPARTMENT OF WATER RESOURCES
Office of Assured Water Supply
500 N. 3rd Street
Phoenix, Arizona 85004

Dear Mr. Dunham:

Enclosed please find an Addendum to the materials that Errol L. Montgomery & Associates Inc., submitted on behalf of American Land Management, LLC, on March 17, 2005, in support of an Analysis of Water Adequacy for The Village at White Hills in Mohave County, Arizona. The addendum includes an update of Attachment 5 of the March 17 submittal titled: ***REGIONAL HYDROGEOLOGY, SOURCE OF WATER SUPPLY, AND PROJECTED 100-YEAR DRAWDOWN IMPACTS IN THE VICINITY OF THE VILLAGES AT WHITE HILLS, MOJAVE COUNTY, ARIZONA***. Additional information provided includes:

- A revised and more detailed analysis of hydrogeologic conditions in Detrital Valley;
- Results from a large-scale surface geophysical survey and analysis conducted by hydroGEOPHYSICS, Inc.;
- An updated well inventory for Detrital Valley;
- Analysis of lithologic and pumping test data obtained for two new deep wells constructed at The Villages at White Hills;
- Results from laboratory chemical analyses for groundwater samples recently obtained from wells; and
- Results of a revised analytical model used to project impacts of groundwater pumping for the 100-year water supply for the proposed development.

Although we are aware that not having the water company information finalized can result in delays to a formal application, we do wish to proceed immediately with the Analysis of Water Adequacy.

If you have any questions or require clarification of any documents in the application, please do not hesitate to contact Greg Wallace or me.

Sincerely,

ERROL L. MONTGOMERY & ASSOCIATES, INC.

William R. Victor

William R. Victor, P.G.

Enclosure (2 copies)

ERROL L. MONTGOMERY & ASSOCIATES, INC.

May 2005

ADDENDUM TO

REGIONAL HYDROGEOLOGY, SOURCE OF WATER SUPPLY, AND PROJECTED 100-YEAR DRAWDOWN IMPACTS IN THE VICINITY OF THE VILLAGES AT WHITE HILLS MOJAVE COUNTY, ARIZONA

Prepared for:

RHODES HOMES – ARIZONA LLC

ERROL L. MONTGOMERY & ASSOCIATES, INC.

CONTENTS

Page

SUMMARY AND CONCLUSIONS **1**

INTRODUCTION **9**

HYDROGEOLOGIC CONDITIONS **11**

PREVIOUS INVESTIGATIONS 12

GEOLOGIC CONDITIONS 13

Younger Alluvium 15

Older Alluvium 15

Muddy Creek Formation 16

GEOLOGIC STRUCTURAL FEATURES 18

AQUIFER HYDRAULIC PROPERTIES 21

Well WH-1L 22

Well WH-2L 23

Parameters Used for Model 24

OCCURRENCE AND MOVEMENT OF GROUNDWATER 25

DEPTH TO GROUNDWATER LEVEL 26

GROUNDWATER QUALITY 27

COLORADO RIVER ACCOUNTING SURFACE 30

PROJECTED 100-YEAR WATER DEMAND **33**

PROJECTED 100-YEAR IMPACTS FROM GROUNDWATER PUMPING **34**

CONCEPTUAL MODEL 35

PROJECTION OF 100-YEAR GROUNDWATER LEVEL DRAWDOWN 37

REFERENCES CITED **39**

CONTENTS – continued

TABLES

Table

1 WELL INVENTORY FOR DETRITAL VALLEY, MOHAVE COUNTY, ARIZONA

2 RESULTS OF LABORATORY CHEMICAL ANALYSES FOR GROUNDWATER SAMPLES OBTAINED FROM WELLS IN AREA OF THE VILLAGES AT WHITE HILLS, MOHAVE COUNTY, ARIZONA

ILLUSTRATIONS

Figure

1 LOCATION MAP FOR DETRITAL VALLEY

2 WATER LEVEL DRAWDOWN GRAPH FOR PUMPED WELL WH-1L

3 WATER LEVEL RECOVERY GRAPH FOR PUMPED WELL WH-1L

4 WATER LEVEL DRAWDOWN GRAPH FOR PUMPED WELL WH-2L

5 WATER LEVEL RECOVERY GRAPH FOR PUMPED WELL WH-2L

6 PROJECTED GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY, AVERAGE ANNUAL TOTAL PUMPING RATE OF 16,320 ACRE-FEET PER YEAR WITH TWO AQUIFER BOUNDARIES

7 PROJECTED GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY, AVERAGE ANNUAL TOTAL PUMPING RATE OF 22,260 ACRE-FEET PER YEAR WITH ONE AQUIFER BOUNDARY

CONTENTS – continued

Figure

8 HYDROGRAPH OF GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING 16,320 ACRE-FEET PER YEAR WITH TWO AQUIFER BOUNDARIES AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY

9 HYDROGRAPH OF GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING 22,260 ACRE-FEET PER YEAR WITH ONE AQUIFER BOUNDARY AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY

APPENDICES

Appendix

A WELL NUMBERING SYSTEM

B SUMMARY LITHOLOGIC LOGS FOR WELLS WH-1L AND WH-2L

C HYDROGEOPHYSICS, INC. REPORT

D ANALYTICAL MODEL – THWELLS MODEL WELL LOCATIONS, PUMPING RATES, AQUIFER PARAMETERS, AND MODEL RESULTS

ERROL L. MONTGOMERY & ASSOCIATES, INC.

May 2005

ADDENDUM TO

REGIONAL HYDROGEOLOGY, SOURCE OF WATER SUPPLY, AND PROJECTED 100-YEAR DRAWDOWN IMPACTS IN THE VICINITY OF THE VILLAGES AT WHITE HILLS MOJAVE COUNTY, ARIZONA

Prepared for:
RHODES HOMES – ARIZONA LLC

SUMMARY AND CONCLUSIONS

The following summary and conclusions are based on compilation and review of additional hydrogeologic data for the study area and development and testing of an analytical model, and are focused on the additional information. Complete analysis should be conducted using both this addendum and the original report submitted to Arizona Department of Water Resources (ADWR) on March 17, 2005 (Montgomery & Associates, 2005). Projections of 100-year impacts from pumping to supply the proposed development at The Villages at White Hills (the "Property") indicate the availability of more than 16,000 acre-feet per year (af/yr) of adequate quality groundwater.

1. The projected total water demand following build out at the Property was estimated to be about 15,689 af/yr in the March 17 Application for an Analysis of Adequate Water Supply (Montgomery & Associates, 2005). Based on

results given herein, the water supply requested for determination of adequacy is unchanged.

2. The new information provided in this addendum represents a substantial increase in the body of knowledge available for groundwater conditions in Detrital Valley and provides an appropriate basis for determination of water adequacy for the Property. Prior to the Rhodes Homes drilling program, no direct data were available for the deep aquifer system in Detrital Valley. Because virtually all existing groundwater demand near the Property is supplied from wells completed in the shallow aquifer zone and because a thick poorly permeable clay unit separates the shallow and deep aquifer zones in the Property area, it is likely that development of the deep aquifer zone at the Property will have little or no impact on existing groundwater users near the Property.

3. The northern and southern parts of the Detrital Valley groundwater basin have different structural features, but are in good hydraulic connection via the permeable alluvial sediments that fill the structural bedrock trough linking the two parts of the basin. The basin is filled with a sequence of alluvial deposits of Late Tertiary to Quaternary age that overlies granitic, metamorphic, and volcanic bedrock units. The bedrock units form the basal and lateral boundaries of the basin and yield small quantities of groundwater to wells, except where saturated and abundantly fractured. The basin-fill alluvial deposits comprise the principal groundwater aquifer; thickness of these deposits ranges from a featheredge at the mountain fronts to possibly more than 6,000 feet in the south part of the basin. The alluvial basin-fill deposits include, in descending order, the following units: younger alluvium; older alluvium, including the Chemehuevi Formation; and the Muddy Creek Formation.

4. The older alluvium unit is the principal aquifer for virtually all of the existing production water wells in the non-bedrock areas of Detrital Valley near the Property. The lower part of the unit lies below groundwater table and reported yields to wells range from a few gallons per minute (gpm) to 640 gpm; most reported yields are small due chiefly to the pump capacity selected for domestic or stock use and are not representative for production capacity of the unit. Thickness of the unit across the Property is relatively consistent, ranging from about 460 feet on the east side at well WH-2L to 480 feet on the west side at well WH-1U. At well WH-1U, depth to non-pumping groundwater level was about 417 feet below land surface (bls) and sustainable yield of the well exceeded the maximum capacity of the pump, which was about 310 gpm.

5. Where penetrated by wells in the Property area, the Muddy Creek Formation consists chiefly of a mudstone facies underlain by conglomerate. The conglomerate is the most important water-bearing part of the formation in Detrital Valley. At the Property, thickness of the mudstone facies ranges from 430 feet at well WH-2L on the east side of the property to 850 feet at well WH-1L on the west side of the property. Thickness of the conglomerate ranges from 200 feet at well WH-2L, where bedrock was encountered at a depth of 1,140 feet bls, to more than 640 feet at well WH-1L, where base of the conglomerate was not encountered to a depth of 2,006 feet bls.

6. The conglomerate comprises an essentially untapped aquifer zone that is capable of yielding large quantities of adequate quality groundwater to wells. Results for exploration wells at the Property, together with well records given by Montgomery & Associates (2005) for selected deep wells in the Property area, demonstrate that depth to bedrock is large and the deep aquifer zone is extensive in this part of the basin. These drillers logs support the conclusion

that the conglomerate extends more than 10 miles across Detrital Valley and spans the entire length of the Property. In addition, the conglomerate is known to extend 30 or more miles from north to south in the basin. In the south part of Detrital Valley, thickness of the conglomerate may be more than 1,000 feet.

7. The structural geology of Detrital Valley is complex and represents the transition between two different domains of structural features associated with the Colorado River extensional corridor. Extreme Cenozoic structural extension occurred in this region and was accompanied by extensive systems of high and low angle normal faults, listric normal faults, thrust faults, detachment faults, and strike-slip faults. The structural systems in the basin are believed to be associated with abundant fracturing of bedrock and the overlying conglomerate of the Muddy Creek Formation.

8. hydroGEOPHYSICS, Inc. was contracted by M&A to conduct additional gravity surveys to provide better definition of the topography of the bedrock surface beneath basin-fill deposits in Detrital Valley. This gravity study, together with aquifer data obtained by Montgomery & Associates, demonstrates that the basin-fill deposits aquifer in Detrital Valley is extensive, thick, and contiguous throughout most of the basin, and provides a good source of adequate groundwater supply to the proposed Rhodes Homes development. The gravity survey and other evidence suggest that detachment faulting displaced rocks of the bedrock complex on top of the conglomerate of the Muddy Creek Formation, and may thereby have caused a hydraulic connection between the two basins via the conglomerate. If a hydraulic connection occurs between the Detrital and Hualapai basins, the White Hills would not be a barrier to groundwater movement between the

basins and would not require a no-flow model boundary to be simulated east of the Property.

9. Pumping tests were conducted by M&A for the conglomerate aquifer zone at the Rhodes Homes Property. From March 19 through April 8, 2005. Results for well WH-1L located on the west side of the Property indicate an operative transmissivity of about 1,500 gallons per day per foot width of aquifer (gpd/ft). This transmissivity is considered to be representative for poorly permeable parts of the conglomerate aquifer zone. Results for well WH-2L located on the east side of the Property indicate an operative transmissivity of about 57,000 gpd/ft. This transmissivity is considered to be representative for relatively permeable parts of the conglomerate aquifer zone. An average aquifer transmissivity of 29,000 gpd/ft was used for modeling purposes. Because the conglomerate aquifer zone is confined in the Property area, a storage coefficient of 0.001 was used for the model.

10. Groundwater in the older alluvium unit occurs under unconfined conditions throughout Detrital Valley. The Property is located north from an assumed groundwater divide between the Detrital Valley and Sacramento Valley. Groundwater in the older alluvium unit moves through the system generally from south to north in the Detrital groundwater basin, and from north to south in the Sacramento Valley groundwater basin. The volume of groundwater in storage in the Detrital Valley aquifer system far exceeds the annual volume of recharge and discharge of groundwater in the basin.

11. Groundwater in the conglomerate of the Muddy Creek Formation occurs under confined conditions in the Property area. Direction of groundwater movement in this deeper system is not known, but is assumed to be similar to the direction in the shallower system. Altitude of groundwater level measured

in the conglomerate was about 2,067 feet above mean sea level (feet msl) in April 2005 at well WH-1L [B(27-21)25ADC], located on the west side of the Property. This level is about 47 feet higher than the groundwater level measured in adjacent older alluvium well WH-1U, indicating an upward component of hydraulic gradient from the deeper zone.

12. Groundwater samples were obtained from wells WH-1U, WH-1L, and WH-2L at the Property, and from an off-Property well at Rosie's Cafe [B(27-21)25BAA]. Results indicate that chemical quality of groundwater is good in the older alluvium and the conglomerate unit and is considered fit for human consumption, except that some treatment may be necessary to decrease concentrations of arsenic to meet the new U.S. Environmental Protection Agency maximum contaminant level (MCL) of 0.010 milligrams per liter (mg/L) for drinking water that will go into effect in January 2006. Concentrations of arsenic detected in representative samples from the completed wells ranged from 0.012 in the older alluvium to 0.041 mg/L in the conglomerate. The current MCL for arsenic is 0.050 mg/L.

13. Projected water demands were estimated for the proposed development based on the projected number of residential units and acreages for other land uses identified by Rhodes Homes. Types of residential lots include only single family; residential water demands include interior and exterior uses. Other water demands include: interior and exterior demands for commercial property and schools, and landscaping demands for right-of-ways, easements, and parks. In addition, water demands for construction water and for lost and unaccounted for water were included. The projected total water demand following build out is estimated to be about 15,689 af/yr. Details for the basis of the estimated water demand are included in the

Application for an Analysis of Adequate Water Supply (Montgomery & Associates, 2005).

14. Based on results of the gravity survey and analysis of detachment faulting in the White Hills, it was considered appropriate to simulate two cases. Case A simulates the White Hills as a barrier boundary to groundwater movement. Case B simulates the White Hills as an area underlain by basin-fill deposits that provide a hydraulic connection between the Detrital and Hualapai groundwater basins.

15. Projected 100-year impacts of pumping for water supply for the proposed Villages at White Hills development indicate that less than 846 feet of drawdown will be required to meet the needs of the development under Case A (16,320 af/yr), and sufficient groundwater is available to serve the development and meet all requirements of ADWR. The results for Case B indicate that a maximum water demand of 22,260 af/yr could be supplied adequately with less than 850 feet of drawdown in the aquifer if the White Hills do not function as a barrier boundary to groundwater movement between the Detrital and Hualapai groundwater basins.

16. Several factors ensure that production wells for the proposed Rhodes Homes development will not impact the Colorado River subflow. First, the Property lies outside the accounting surface for Detrital Valley. Second, altitude of the water table in the Older Alluvium unit and altitude of the potentiometric surface for the conglomerate of the Muddy Creek Formation measured in wells at the Property are more than 800 feet above the accounting surface. Lastly, the accounting surface is more than 1,200 feet below land surface at the Property and an ADWR statement of adequate water supply can not be

issued to a development that draws down the water level in the aquifer below a depth of 1,200 feet without a variance.

A final issue that should be addressed is whether or not a multi-dimensional ***numerical*** groundwater flow model is needed to project drawdown impacts from pumping in the Detrital groundwater basin. It is often the case that numerical models require many important input parameters that must be estimated subjectively based on little or no information for a specific basin. The usefulness of ***analytical*** models is that these parameters can be lumped into a consistent framework and do not require subjective analysis. The important parameters for which data do exist can be input to an appropriate analytical model and the result is a product that is repeatable and defensible, and potentially provides a more acceptable result for groundwater users in a basin. In other words, hydrologic uncertainty is best addressed with a simpler approach, not a more that complex approach that provides meaningless accuracy based on subjective estimation of unknown physical characteristics. THWELLS is an analytical model that has been widely accepted in Arizona for projecting impacts to groundwater systems and is appropriate for such use in the Detrital Valley.

ERROL L. MONTGOMERY & ASSOCIATES, INC.

May 2005

ADDENDUM TO

REGIONAL HYDROGEOLOGY, SOURCE OF WATER SUPPLY, AND PROJECTED 100-YEAR DRAWDOWN IMPACTS IN THE VICINITY OF THE VILLAGES AT WHITE HILLS MOJAVE COUNTY, ARIZONA

Prepared for:
RHODES HOMES – ARIZONA LLC

INTRODUCTION

In accordance with arrangements with Mr. Jim Rhodes, President, RHODES HOMES – ARIZONA LLC ("Rhodes Homes"), Errol L. Montgomery & Associates, Inc. (M&A) has prepared this addendum to provide important additional information obtained from field investigations to supplement the report having the same title submitted to Arizona Department of Water Resources (ADWR) as Attachment 5 to the Application for Analysis of Water Adequacy on March 17, 2005 (M&A, 2005). The report and this addendum comprise an integral part of the Application for Analysis of Water Adequacy for the proposed development identified as The Villages at White Hills. The purpose of this information is to provide hydrogeologic review and analysis for evaluating the potential for development of a 100-year groundwater supply to serve the proposed development.

The focus of this addendum is the new information obtained since the previous submittal; this information should be used in conjunction with the information provided in the March 17 report to provide a complete analysis of hydrogeologic conditions for the application. The additional information includes:

- A revised and more detailed analysis of hydrogeologic conditions;
- Results from a large-scale surface geophysical survey and analysis conducted by hydroGEOPHYSICS, Inc. (2005);
- An updated well inventory for Detrital Valley;
- Analysis of lithologic and pumping test data obtained for two new deep wells constructed at The Villages at White Hills;
- Results from laboratory chemical analyses for groundwater samples recently obtained from wells; and
- Results of a revised analytical model used to project impacts of groundwater pumping for the 100-year water supply for the proposed development.

The new information provided in this addendum represents a substantial increase in the body of knowledge available for groundwater conditions in Detrital Valley and provides an appropriate basis for determination of water adequacy for the Property. Prior to the Rhodes Homes drilling program, no direct data were available for the deep aquifer system in Detrital Valley. Nearly all previous drilling programs failed to penetrate into the deeper aquifer zone and none provided proper aquifer test data to characterize the system. Because virtually all existing groundwater demand near the Property is supplied from wells completed in the shallow aquifer zone and because a thick poorly permeable clay unit separates the shallow and deep aquifer zones in the Property area, it is likely that development of the deep aquifer zone at the Property will have little or no impact on existing groundwater users near the Property.

The projected total water demand following build out at the Property was estimated to be about 15,689 acre-feet per year (af/yr) in the March 17 Application for an Analysis of Adequate Water Supply (M&A, 2005). Based on results given herein, the water supply requested for determination of adequacy is unchanged.

HYDROGEOLOGIC CONDITIONS

This section replaces the section on Hydrogeologic Conditions submitted to ADWR in the March 17, 2005 report (M&A, 2005). Detrital Valley has a semi-arid climate characterized by hot summers and mild winters; average annual precipitation is about 10 inches (Western Regional Climate Center, 2005). Streams in Detrital Valley are generally ephemeral and flow only in direct response to storm water runoff events; therefore, groundwater is the only reliable source of water except for Lake Mead. The valley floor consists of gently sloping, coalescing alluvial fans that extend from the mountain fronts on the west and east margins of the elongate basin and meet along the Detrital Wash channel, which flows north through the basin to Lake Mead. The valley floor slopes northward from an altitude of about 3,400 feet above mean sea level (msl) near Grasshopper Junction to about 1,223 feet msl at Lake Mead (Dillenburg, 1987). Maximum altitudes in the basin range from 5,456 feet msl at Mount Perkins in the Black Mountains on the west to 7,148 feet msl at Mount Tipton in the Cerbat Mountains on the east (Dillenburg, 1987).

The parcels comprising The Villages at White Hills proposed development are identified as the "Property", and are located within the Detrital Valley groundwater basin of Mohave County, Arizona. The Property includes about 2,700 acres east of State Highway 93 and along White Hills Road, and is shown in red on **Figure 1**.

Sources of hydrogeologic information used for this study include publications and data files of the U.S. Geological Survey (USGS), ADWR, the Arizona Geological Survey, the Nevada Bureau of Mines and Geology, the Utah Geological Association, universities, and private consultants. In addition, three exploration wells (two deep, one shallow) were constructed and tested for Rhodes Homes at the Property and

one exploration well is presently being constructed in the south part of Detrital Valley. Data obtained from these sources include: 1) well construction details; 2) reported well pumping rates; 3) groundwater level data; 4) groundwater quality data; 5) lithologic, physical, and structural characteristics for geologic units; and 6) aquifer parameters and pumping test data.

An updated inventory of wells in Detrital Valley is given in **Table 1**; to focus on the important aquifers in Detrital Valley, this table excludes wells located in the bedrock areas (Richard, 2004) shown on **Figure 1**. The well numbering system for the State of Arizona is described in **Appendix A**. Summary lithologic logs for the two deep wells recently constructed at the Property are given in **Appendix B**.

PREVIOUS INVESTIGATIONS

Literature reviewed and used for preparation of this summary hydrogeologic report is listed in the References Cited section. Previous investigations by Richard and others (2000) document geology of the mountain ranges that bound the groundwater basin in which the Property lies. Data for the groundwater system in Detrital Valley are sparse. Reports that provide groundwater basic data and preliminary analyses of the hydrogeologic system in the Property area and adjacent areas include: Dillenburg (1987); Gillespie and Bentley (1971); and Rascona (1991).

A key aspect of the hydrogeologic conditions in Detrital Valley is the complex structural geology of the region, which affects the geometry, boundaries, and lithology of the groundwater aquifers. Numerous studies have been published for the geologic evolution of the northern Colorado River extensional corridor in

northwest Arizona and southern Nevada and the transition from the Colorado Plateau to the Basin and Range Physiographic Province. Some of the more useful studies for purposes of the present investigation include: Blair and Armstrong (1979); Bohannon (1984); Duebendorfer and others (1991, 1992, 1998a, 1998b, and 2001); Faulds (1993 and 1999); Faulds and others (1997 and 1998); Longwell (1928 and 1936); and Price and Faulds (1999). Faulds and others (2001) provide a particularly useful compilation and synthesis of the regional structural and geologic conditions that affect the Detrital Valley groundwater systems.

GEOLOGIC CONDITIONS

The Property is located in the central part of an elongate structural basin bounded on the east by the north-northwest-trending White Hills and Cerbat Mountains, and on the west by the north-northwest-trending Black Mountains **(Figure 1)**. The Detrital groundwater basin is further bounded on the south by a groundwater and surface water divide with Sacramento Valley, and on the north by Lake Mead. The basin is about 50 miles long and 15 miles wide, and comprises an area of about 750 square miles (Dillenburg, 1987). The study area is underlain by Quaternary and Tertiary alluvial sediments that were deposited in the structural basin, which encompasses the main part of Detrital Valley. Extent of the alluvial basin is generally defined by fault-block mountain ranges, characteristic of the Basin-and-Range physiographic province.

The mountain ranges are composed chiefly of uplifted Precambrian metamorphic and igneous rocks that have been intruded by younger igneous rocks. The White Hills to the east are comprised of Tertiary volcanic and sedimentary rocks and Early Proterozoic granitic and metamorphic (gneissic) rocks; these mountains

are named after the light colored sedimentary rocks (Richard and others, 2000). The White Hills have a core complex of Precambrian granite gneiss with less extensive Cretaceous granite (Allen, Stephenson & Associates, 2002). However, analysis of recent gravity data obtained by hydroGEOPHYSICS, Inc. (2002 and 2005) suggests that the exposed bedrock in the White Hills may be underlain by basin-fill deposits due to a detachment fault and, therefore, may not comprise a boundary to the Detrital Valley groundwater system. The Cerbat Mountains to the east are composed primarily of Early Proterozoic granitic rocks with some Early Proterozoic metamorphic rocks (Richard and others, 2000). The Black Mountains to the west are composed primarily of Tertiary volcanic and sedimentary rocks and Early Proterozoic metamorphic rocks (Richard and others, 2000). The mountain ranges and alluvial basin are associated with a complex structural history of extensional faulting that occurred chiefly between 15 and 6 million years ago (Anderson and others, 1992).

The northern and southern parts of the Detrital Valley groundwater basin have different structural features, but are in good hydraulic connection via the permeable alluvial sediments that fill the structural bedrock trough linking the two parts of the basin **(Figure 1)**. The basin is filled with a sequence of alluvial deposits of Late Tertiary to Quaternary age that overlies granitic, metamorphic, and volcanic bedrock units. The bedrock units form the basal and lateral boundaries of the basin and yield small quantities of groundwater to wells, except where saturated and abundantly fractured. The basin-fill alluvial deposits comprise the principal groundwater aquifer; thickness of these deposits ranges from a featheredge at the mountain fronts to possibly more than 6,000 feet in the south part of the basin near the intersection of U.S. Highway 93 and Pierce Ferry Road (Oppenheimer and Sumner, 1980; Figure 1 of M&A, 2005). The alluvial basin-fill deposits include, in descending order, the following units: younger alluvium; older alluvium, including

the Chemehuevi Formation (Wilson and Owen-Joyce, 1994); and the Muddy Creek Formation.

Younger Alluvium

The younger alluvium of Holocene age consists of unconsolidated gravel, sand, silt, and clay deposited on alluvial slopes and flood plains and in stream channels (Wilson and Owen-Joyce, 1994). Where penetrated by wells at the property **(Figure 1)**, lithologic logs indicate thickness of the younger alluvium is 40 to 50 feet **(Appendix B)**. This unit is important for conveying recharge of storm water runoff to deeper units along stream channels, but generally is not important as a source of groundwater for wells in Detrital Valley. The younger alluvium is commonly lumped with the older alluvium on geologic maps of the area.

Older Alluvium

The older alluvium of Miocene, Pliocene, and Pleistocene ages were deposited in alluvial fans that extend from the surrounding mountain ranges into the valley floor and by the Colorado River, and consist of weakly to moderately consolidated gravel, sand, silt, and clay (Wilson and Owen-Joyce, 1994). The older alluvium is divided into two units: a local gravel unit; and the Colorado River deposits (Dillenburg, 1987). The older alluvium unconformably overlies the Muddy Creek Formation. The mineralogy and rock type of the older alluvium sands and gravels are representative of the source rocks in the surrounding mountains that have shed into the basin by erosive processes. Where penetrated by wells in the Property area, this unit consists chiefly of sand and gravel with some silt and clay. Thickness of the unit reaches more than 500 feet in the Property area. Thickness of

the unit across the Property **(Figure 1)** is relatively consistent, ranging from about 460 feet on the east side at well WH-2L to 480 feet on the west side at well WH-1U **(Appendix B)**.

The older alluvium unit is the principal aquifer for virtually all of the existing production water wells in the non-bedrock areas of Detrital Valley near the Property. The lower part of the unit lies below groundwater table and reported yields to wells range from a few gallons per minute (gpm) to 640 gpm **(Table 1)**; most reported yields are small due chiefly to the pump capacity selected for domestic or stock use and are not representative for production capacity of the unit. At well WH-1U, located adjacent to well WH-1L **(Figure 1)** at the Property and completed in the older alluvium unit, depth to non-pumping groundwater level was 417 feet below land surface (bls) and sustainable yield of the well exceeded the maximum capacity of the pump, which was about 310 gpm.

The Chemehuevi Formation (Longwell, 1936) of Pleistocene age consists of siltstone with interbedded sand and gravel deposited by the Colorado River near Lake Mead in the northern part of the basin (Laney, 1979). The Chemehuevi Formation is the main source of water for the community of Temple Bar and unconformably overlies both the older alluvium and the Muddy Creek Formation (Laney, 1979). The Chemehuevi Formation is capable of yielding moderate to large quantities of groundwater to wells (Dillenburg, 1987; Wilson and Owen-Joyce, 1994).

Muddy Creek Formation

In the Lake Mead region, the Muddy Creek Formation (Longwell, 1928 and 1936; Bohannon, 1984) of late Miocene to Pliocene age generally consists of moderately to strongly cemented non-marine gravel, sand, silt, clay, gypsum, and

halite of local origin that is interbedded with and overlain by volcanic flows at several locations (Blair and Armstrong, 1979; Wilson and Owen-Joyce, 1994). The non-marine Hualapai Limestone is included as a member of the formation. The Muddy Creek Formation unconformably overlies bedrock.

In Detrital Valley, the Muddy Creek Formation consists of the Fortification Basalt Member, the Hualapai Limestone Member, a mudstone facies, and a conglomerate facies (Dillenburg, 1987). A remnant of the Hualapai Limestone Member is exposed in the northernmost part of Detrital Valley, about 5 miles southwest from Temple Bar (Blair and Armstrong, 1979); however, this member is not recognized in the Muddy Creek Formation in the main part of the basin to the south. The mudstone facies is nearly impermeable and will not yield significant quantities of groundwater to wells (Wilson and Owen-Joyce, 1994). The conglomerate is the most widespread facies and is the most important water-bearing part of the formation in Detrital Valley; its composition reflects the nearby source areas in the surrounding mountains. The thicknesses of the different facies vary considerably in Detrital Valley (Dillenburg, 1987).

Where penetrated by wells in the Property area, the Muddy Creek Formation consists chiefly of the mudstone facies underlain by the conglomerate. At the Property, the mudstone consists of mudstone, claystone, and clay interbedded with thin to thick layers of gypsum; thickness of this facies ranges from 430 feet at well WH-2L on the east side of the property to 850 feet at well WH-1L on the west side of the property **(Figure 1; Appendix B)**. The conglomerate consists of angular to subrounded clasts of igneous and metamorphic rocks in a lithified matrix; thickness of the conglomerate ranges from 200 feet at well WH-2L, where bedrock was encountered at a depth of 1,140 feet bls, to more than 640 feet at well WH-1L, where base of the conglomerate was not encountered to a depth of 2,006 feet bls **(Appendix B)**.

This conglomerate comprises an essentially untapped aquifer zone that is capable of yielding large quantities of adequate quality groundwater to wells. Results for exploration wells at the Property, together with well records given by M&A (2005) for selected deep wells in the Property area, demonstrate that depth to bedrock is large and the deep aquifer zone is extensive in this part of the basin. These drillers logs support the conclusion that the conglomerate extends from as far east as wells B(28-19)29DCC and B(28-19)31AAA to west from well B(27-21)25ADC. This distance is more than 10 miles across Detrital Valley and spans the entire length of the Property. In addition, based on drillers and lithologic logs, the conglomerate is known to extend to the north at least as far as Township 29 North, Range 21 West, and to the south at least as far as Township 24 North, Ranges 19 and 20 West **(Figure 1)**, a distance of 30 or more miles. In the south part of Detrital Valley, thickness of the conglomerate may be more than 1,000 feet (Dillenburg, 1987).

GEOLOGIC STRUCTURAL FEATURES

The Lake Mead region lies in the northern Colorado River extensional corridor and the transition area from the Colorado Plateau to the Basin and Range Physiographic Province. The structural geology of Detrital Valley is complex and represents the transition between two different domains of structural features associated with the Colorado River extensional corridor. Extreme Cenozoic structural extension occurred in this region and was accompanied by extensive systems of high and low angle normal faults, listric normal faults, thrust faults, detachment faults, and strike-slip faults. A major extensional accommodation zone, referred to as the Black Mountains accommodation zone, has been mapped "where

oppositely dipping normal-fault systems and attendant tilt-block domains terminate in a belt of overlapping fault tips" (Faulds and others, 2001). The Lake Mead domain occurs in the north part of Detrital Valley and comprises a system of west-dipping normal faults and east-tilted fault blocks north of the Black Mountains accommodation zone (Faulds and others, 2001). The Whipple domain occurs in the south part of Detrital Valley and comprises a system of east-dipping normal faults and west-tilted fault blocks south of the Black Mountains accommodation zone (Faulds and others, 2001). The accommodation zone is shown by (Faulds and others, 2001) to cross the Rhodes Homes Property from northwest to southeast. The accommodation zone and adjacent structural systems are believed to be associated with abundant fracturing of bedrock and the overlying conglomerate of the Muddy Creek Formation in Detrital Valley.

The Detrital basin is a graben developed between the west-dipping Blind Goddess and related faults on the east (Price and Faulds, 1999) and the east-dipping Detrital fault on the west (Faulds and others, 2001). These faults are associated with the model boundaries described later in this addendum report. The Detrital and Blind Goddess faults are poorly exposed in the basin, but are imaged on unpublished seismic reflection profiles (Faulds, 1999; Price and Faulds, 1999). The Detrital fault is a major antithetic fault and appears to have accommodated modest west-tilting of the Detrital basin (Faulds and others, 2001). The southwest part of the Detrital basin is likely a west-tilted half graben developed in the hanging wall of the Mockingbird Mine fault (Faulds and others, 2001). According to Faulds and others (2001), the magnitude of west-tilting decreases across the Detrital basin toward the easternmost anticline in the Black Mountains accommodation zone, suggesting that the Mockingbird Mine fault and/or related east dipping faults have convex upward or anti-listric geometries.

hydroGEOPHYSICS, Inc. was contracted by M&A to conduct additional gravity surveys to provide better definition of the topography of the bedrock surface beneath basin-fill deposits in Detrital Valley; the resulting report is given in **Appendix C**. The residual Bouguer anomaly map from **Appendix C** is overlain on the base map shown on **Figure 1**. Inspection of **Figure 1** indicates that the low-gravity structural trough that is the Detrital basin graben extends from the south basin boundary to several miles north of the Rhodes Homes Property. Gravity profiles A-A' through F-F' in **Appendix C** depict the hydroGEOPHYSICS, Inc. interpretation of subsurface conditions along the lines of profile shown on the residual Bouguer anomaly map in **Appendix C**. This gravity study, together with aquifer data obtained by M&A, demonstrates that the basin-fill deposits aquifer in Detrital Valley is extensive, thick, and contiguous throughout most of the basin, and provides a good source of adequate groundwater supply to the proposed Rhodes Homes development.

Further inspection of **Figure 1** indicates that the Detrital basin graben is adjacent on the north to a gravity low extending east-west beneath the White Hills, approximately through Townships 27 and 28 North, Ranges 18 and 19 West. This gravity low is also shown on gravity profiles A-A', B-B', and C-C' **(Appendix C)** and is interpreted to represent reverse stratigraphy caused by detachment faulting. This interpretation, together with interpretations from previous work (hydroGEOPHYSICS, Inc., 2002) and a case made by Allen, Stephenson & Associates (2002) based on geologic mapping and gravity data in the White Hills, suggest that detachment faulting displaced rocks of the bedrock complex on top of the conglomerate of the Muddy Creek Formation, and may thereby have caused a hydraulic connection between the two basins via the conglomerate. Such detachment faults are described at length by Faulds and others (2001) and other investigators of the region, and appear to provide a plausible mechanism for the unusual features described in the White Hills. If a hydraulic connection occurs

between the Detrital and Hualapai basins, the White Hills would not be a barrier to groundwater movement between the basins and would not require a no-flow model boundary to be simulated east of the Property in the THWELLS model described later in this addendum report.

AQUIFER HYDRAULIC PROPERTIES

Important aquifer hydraulic properties that control rate of groundwater movement and amount of groundwater storage in the aquifer include transmissivity, hydraulic conductivity, and specific yield or storage coefficient. Transmissivity is defined as the rate of groundwater movement under a 1:1 hydraulic gradient through a vertical section of an aquifer 1 foot wide and extending the full saturated thickness of the aquifer (Theis, 1935). Units for transmissivity are gallons per day per foot width of aquifer (gpd/ft). Transmissivity is a measure of the ability of an aquifer to transmit groundwater and is equal to the product of hydraulic conductivity and saturated thickness of the aquifer. Hydraulic conductivity is defined as the rate of groundwater movement, under a 1:1 hydraulic gradient, through a unit area of aquifer material (Heath, 1989). Hydraulic conductivity has units of gallons per day per square foot (gpd/ft^2). Hydraulic conductivity is also commonly expressed in units of feet per day (ft/day), which is gpd/ft^2 divided by 7.48 gallons per cubic foot. Specific yield is defined as the volume of water that would drain from a unit volume of aquifer material and is dimensionless; this term is applied to unconfined aquifers. Storage coefficient is defined as the volume of water released from storage in a unit prism of an aquifer when the hydraulic head is lowered a unit distance; this term is applied to confined aquifers (Heath, 1989).

A search of ADWR records yielded no pumping test information for wells in the Detrital Valley groundwater basin; however, pumping tests were conducted by M&A for the conglomerate aquifer zone at the Rhodes Homes Property. From March 19 through April 8, 2005, step-rate pumping tests and constant-rate aquifer tests were conducted at wells WH-1L and WH-2L **(Figure 1)**. During the tests, the following parameters were monitored: depth to water level; instantaneous discharge rate; total volume of groundwater pumped; discharge pressure; and water quality parameters. Discharge rate at the pumped wells was monitored using a mechanical flow meter. Depth to groundwater level in each pumped well was monitored using both an electronic transducer connected to a datalogger and an electric water level sounder. Depth to groundwater level monitored using the transducers was calibrated using an electrical sounder before and after testing operations. Drawdown measured using the transducers was generally the same as drawdown measured using the sounders. Transmissivity was calculated from aquifer test results using the Cooper-Jacob graphical method (1946).

Well WH-1L

On March 19, 2005, a step-rate pumping test was conducted at well WH-1L to select a sustainable pumping rate for the subsequent 24-hour constant-rate aquifer test and to evaluate well efficiency. During the step-rate test, the well was pumped for four consecutive periods (steps) of 120 minutes. During each step, a constant discharge rate was maintained. Discharge rate was increased for each subsequent step. At the end of the 8-hour step-rate test, the pump was shut off and groundwater level was allowed to recover before conducting the aquifer test.

On March 20, 2005, a constant-rate aquifer test was conducted at well WH-1L. Duration of the pumping period was 24 hours. A nearly constant discharge rate was maintained at about 253 gpm for the entire pumping period. All

measurements for discharge rate were within 2 percent of the average pumping rate of 253 gpm. Results of the aquifer test are shown in **Figures 2 and 3**.

Pre-pumping depth to groundwater level was about 276 feet below land surface. Groundwater level drawdown was very rapid initially due to removal of water from borehole storage. Subsequently, depth to groundwater level changed very slowly. Maximum drawdown after 24 hours of pumping was about 324 feet. Specific capacity was 0.8 gpm/ft after 24 hours of pumping.

Transmissivity calculated using the aquifer test data ranged from 1,500 to 2,100 gpd/ft. Operative transmissivity for the aquifer at well WH-1L was estimated to be about 1,500 gpd/ft. This transmissivity is considered to be representative for poorly permeable parts of the conglomerate aquifer zone.

Well WH-2L

On April 6, 2005, a step-rate pumping test was conducted at well WH-2L to select a sustainable pumping rate for the subsequent 24-hour constant-rate aquifer test and to evaluate well efficiency. During the step-rate test, the well was pumped for six consecutive periods (steps) of 60 minutes. During each step, a constant discharge rate was maintained. Discharge rate was increased for each subsequent step. At the end of the 6-hour step-rate test, the pump was shut off and groundwater level was allowed to recover before conducting the aquifer test.

On April 7, 2005, a constant-rate aquifer test was conducted at well WH-2L. Duration of the pumping period was 24 hours. A nearly constant discharge rate was maintained at about 310 gpm for the entire pumping period. All measurements for discharge rate were within 2 percent of the average pumping rate of 310 gpm. Results of the aquifer test are shown in **Figures 4 and 5**.

Pre-pumping depth to groundwater level was about 434 feet below land surface. Groundwater level drawdown was very rapid initially due to removal of water from borehole storage. Subsequently, depth to groundwater level changed very slowly. Maximum drawdown after 24 hours of pumping was about 11.8 feet. Specific capacity was 26 gpm/ft after 24 hours of pumping.

Transmissivity calculated using the aquifer test data ranged from 56,000 to 57,000 gpd/ft. Operative transmissivity for the aquifer at well WH-2L was estimated to be about 57,000 gpd/ft. This transmissivity is considered to be representative for relatively permeable parts of the conglomerate aquifer zone.

Parameters Used for Model

For modeling purposes for The Villages at White Hills, an average saturated thickness of 500 feet was used for the conglomerate unit based on results from drilling wells WH-1L and WH-2L, the hydroGEOPHYSICS, Inc. gravity survey, and Oppenheimer and Sumner (1980). An aquifer transmissivity of 29,000 gpd/ft was used for the model and was the average from the operative transmissivities calculated for the conglomerate from pumping tests at wells WH-1L (1,500 gpd/ft) and WH-2L (57,000 gpd/ft). Because the conglomerate aquifer zone is confined in the Property area, a storage coefficient of 0.001 was used for the model.

Data are available for wells that were tested in the north part of Sacramento Valley, which shares a groundwater divide with Detrital Valley:

WELL IDENTIFIER	WELL NAME	TEST DATE	REPORTED TRANSMISSIVITY (gpd/ft)	AVERAGE HYDRAULIC CONDUCTIVITY (gpd/ft^2)	REFERENCE
B(20-18)4 BBA	MP-5	Pre-1971	46,000	70	Gillespie and Bentley (1971)
B(21-18)32 DCC	MP-1	Pre-1971	35,000	70	Gillespie and Bentley (1971)

These wells are completed in the older alluvium to depths of 1,350 and 1,255 feet below land surface. Ongoing drilling of an exploration well in Section 1, Township 24 North, Range 20 West, indicates that it is difficult to distinguish the older alluvium from the conglomerate of the Muddy Creek Formation in the south part of the Detrital basin. Similar observations have been made regarding the older alluvium and the fanglomerate, which is correlative to conglomerate of the Muddy Creek Formation, where the Bouse Formation is absent in Chemehuevi Valley; the fanglomerate is classified there with the older alluvium (Wilson and Owen-Joyce, 1994). Due to similar basin characteristics and source rocks for the older alluvium in the Detrital and Sacramento Valleys, the average hydraulic conductivity reported for these aquifer tests may be applicable to the south part of the Detrital basin. Therefore, the values of transmissivity used for the model are believed to be conservatively small for the Detrital basin.

OCCURRENCE AND MOVEMENT OF GROUNDWATER

Groundwater in the older alluvium unit occurs under unconfined conditions throughout Detrital Valley. The Property is located north from an assumed groundwater divide between the Detrital Valley and Sacramento Valley. Groundwater in the older alluvium unit moves through the system generally from

south to north in the Detrital groundwater basin, and from north to south in the Sacramento Valley groundwater basin (Dillenburg, 1987; Rascona, 1991). The volume of groundwater in storage in the Detrital Valley aquifer system far exceeds the annual volume of recharge and discharge of groundwater in the basin. Altitude of groundwater level measured in the older alluvium unit was about 2,020 feet msl in April 2005 at well WH-1U [B(27-21)25ADC], located on the west side of the Property **(Table 1)**.

Groundwater in the conglomerate of the Muddy Creek Formation occurs under confined conditions in the Property area. Direction of groundwater movement in this deeper system is not known, but is assumed to be similar to the direction in the shallower system. Altitude of groundwater level measured in the conglomerate was about 2,067 feet msl in April 2005 at well WH-1L [B(27-21)25ADC], located on the west side of the Property. This level is about 47 feet higher than the groundwater level measured in adjacent older alluvium well WH-1U, indicating an upward component of hydraulic gradient from the deeper zone. Altitude of groundwater level measured in the conglomerate was about 2,192 feet msl in April 2005 at well WH-2L [B(27-20)16DAA], located on the east side of the Property **(Table 1)**.

DEPTH TO GROUNDWATER LEVEL

Depth to groundwater ranged from about 780 feet bls in the older alluvium unit/conglomerate in the south part of the Detrital Valley groundwater basin to 20 feet bls in the Chemehuevi Formation in the north part of the basin (Dillenburg, 1987). Depth to groundwater in the older alluvium at the Property was about 417 feet bls in April 2005 at well WH-1U [B(27-21)25ADC] **(Table 1)**.

Depth to groundwater in the conglomerate of the Muddy Creek Formation at the Property area was about 370 feet bls in April 2005 at well WH-1L [B(27-21)25ADC], and was 435 feet bls in April 2005 at well WH-2L [B(27-20)16DAA] **(Table 1)**.

GROUNDWATER QUALITY

To supplement the water quality data given in the report that accompanied the Rhodes Homes Application for Analysis of Water Adequacy submitted March 17, 2005 (M&A, 2005), groundwater samples were obtained from wells WH-1U, WH-1L, and WH-2L at the Property, and from an off-Property well at Rosie's Cafe [B(27-21)25BAA]; laboratory chemical results are summarized in **Table 2**.

Inspection of **Table 2** indicates that the chemical quality of groundwater samples obtained from the older alluvium unit at Rosie's Cafe well and well WH-1U is generally excellent. None of the secondary or primary drinking water standards were exceeded for the constituents analyzed, except for arsenic. Concentration of arsenic in these samples was 0.012 milligrams per liter (mg/L), which exceeds the new maximum contaminant level (MCL) for drinking water defined by the U.S. Environmental Protection Agency (EPA) (U.S. Environmental Protection Agency, 2002) of 0.010 mg/L that will go into effect in January 2006. The present MCL for arsenic is 0.050 mg/L.

To characterize the vertical distribution of water quality in the basin-fill deposits, groundwater samples were obtained from wells WH-1L and WH-2L during drilling using the dual rotary drilling technique, during drilling using the conventional

open borehole air-rotary drilling method, and near the end of 24-hour pumping tests conducted for the wells. Inspection of **Table 2** indicates the following:

Well WH-1L: The samples obtained at depths of 475 and 505 feet were obtained from the lower part of the older alluvium during dual rotary drilling and are similar to samples from the Rosie's Cafe well and well WH-1U, except arsenic does not exceed the MCL and manganese exceeds the secondary MCL of 0.05 mg/L **(Table 2)**.

The sample obtained at a depth of 1,385 feet was from the uppermost part of the conglomerate during dual rotary drilling and appears to have been influenced somewhat by poor chemical quality in the overlying gypsiferous mudstone facies. However, no primary MCLs were exceeded, and only the secondary MCLs for sulfate and total dissolved solids of 500 mg/L were exceeded.

The next four samples were composite samples obtained from increasingly deeper intervals in the conglomerate during conventional open borehole air-rotary drilling. These samples have good water quality. No primary MCLs were exceeded, and only the secondary MCLs for sulfate and total dissolved solids were exceeded.

The sample obtained on March 21 was from the completed well near the end of a 24-hour pumping test and is considered a representative sample for the interval of the aquifer that yields water to the well. Results indicate good water quality, although the primary MCL for arsenic was exceeded and the secondary

MCLs for sulfate and total dissolved solids were exceeded **(Table 2)**.

Well WH-2L: The sample obtained at a depth of 960 feet was from the uppermost part of the conglomerate during dual rotary drilling and appears to have been influenced somewhat by poor chemical quality in the overlying gypsiferous mudstone facies. However, no primary MCLs were exceeded, and only the secondary MCLs for manganese (0.05 mg/L), sulfate, and total dissolved solids were exceeded.

The sample obtained at a depth of 1,020 feet was from the middle part of the conglomerate during dual rotary drilling and has good water quality. No primary MCLs were exceeded, and only the secondary MCLs for manganese and fluoride (2.0 mg/l) were exceeded.

The next two samples were composite samples obtained from increasingly deeper intervals in the conglomerate during conventional open borehole air-rotary drilling. These samples have good water quality, except the primary MCL for arsenic was exceeded and the secondary MCLs for manganese and fluoride were exceeded.

The sample obtained on April 8 was from the completed well near the end of a 24-hour pumping test and is considered a representative sample for the interval of the aquifer that yields water to the well; this interval includes the conglomerate and the bedrock complex. Results indicate good water quality, although

the primary MCL for arsenic was exceeded and the secondary MCL for fluoride was exceeded **(Table 2)**.

Overall, chemical quality of groundwater in the older alluvium and the conglomerate unit is considered fit for human consumption, except that some treatment may be necessary to decrease concentrations of arsenic to meet the EPA MCL. Although of aesthetic concern to some people, secondary standards are guidelines only and do not affect potability.

COLORADO RIVER ACCOUNTING SURFACE

Wilson and Owen-Joyce (1994, p. v) define the "accounting surface" that is administered by the U.S. Bureau of Reclamation for the Colorado River corridor as follows:

> "The accounting surface represents the elevation and slope of the unconfined static water table in the river aquifer outside the flood plain and the reservoirs of the Colorado River that would exist if the river were the only source of water to the river aquifer. The accounting surface was generated by using profiles of the Colorado River and water-surface elevations of reservoirs, lakes, marshes, and drainage ditches."

Further, Wilson and Owen-Joyce (1994, p. 6) establishes the following criteria to determine if wells impact the Colorado River subflow:

> **Wells that impact the river subflow:** "Wells that have a static water-level elevation equal to or below the accounting surface are presumed to yield water that will be replaced by water from the river."

Wells that do not impact the river subflow: "Wells that have a static water-level elevation above the accounting surface are presumed to yield water that will be replaced by water from precipitation and inflow from tributary valleys."

There are several factors that ensure production wells for the proposed Rhodes Homes development will not impact the river subflow by these criteria. For reference, the accounting surface from Plate 7 of Wilson and Owen-Joyce (1994) is represented by the red dashed line on **Figure 1**, which also shows the location of the boundary and existing exploration wells for The Villages at White Hills. Inspection of **Figure 1** indicates that the Property lies outside the accounting surface for Detrital Valley. In addition, altitude of the water table in the Older Alluvium unit and altitude of the potentiometric surface for the conglomerate of the Muddy Creek Formation measured in wells **(Table 1)** at the Property are more than 800 feet above the accounting surface, as demonstrated below:

CADASTRAL LOCATION	WELL NAME	AQUIFER ZONE	WELL DEPTH (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL			ACCOUNTING SURFACE ALTITUDE (feet, msl)	FEET ABOVE ACCOUNTING SURFACE
					DATE MEASURED	DEPTH (feet, bls)	ALTITUDE (feet, msl)		
B(27-21) 25 ADC	WH-1U	unconfined older alluv.	540	2,437	4/12/2005	417.2	2,020	1,205.4	815
B(27-21) 25 ADC	WH-1L	confined conglom. of Muddy Crk Fm.	2,006	2,437	4/4/2005	370.3	2,067	1,205.4	862
B(27-20) 16 DAA	WH-2L	confined conglom. of Muddy Crk Fm. & bedrock	1,420	2,627	4/2/2005	435.0	2,192	1,205.4	987

Lastly, in order to obtain a statement of adequate water supply from ADWR, a development can not draw down the water level in the aquifer below a depth of 1,200 feet without a variance. The accounting surface is more than 1,200 feet below land surface at the Property. Therefore, wells used to withdraw groundwater under

an ADWR statement of adequate water supply for the proposed development at The Villages at White Hills are not wells that would impact the Colorado River, according to criteria established by Wilson and Owen-Joyce (1994).

PROJECTED 100-YEAR WATER DEMAND

Projected water demands were estimated for the proposed development based on the projected number of residential units and acreages for other land uses identified by Rhodes Homes. Types of residential lots include only single family; residential water demands include interior and exterior uses. Other water demands include: interior and exterior demands for commercial property and schools, and landscaping demands for right-of-ways, easements, and parks. In addition, water demands for construction water and for lost and unaccounted for water were included. The projected total water demand following build out is estimated to be about 15,689 af/yr. Details for the basis of the estimated water demand are included in the Application for an Analysis of Adequate Water Supply (M&A, 2005).

PROJECTED 100-YEAR IMPACTS FROM GROUNDWATER PUMPING

Projections of 100-year drawdown resulting from estimated groundwater pumping for water supply at the Property were made using the computer software "THWELLS" (van der Heijde, 1996). This software solves the Theis equation to compute drawdown for up to 100 wells and uses spatially uniform values for aquifer parameters. Data used in the THWELLS model are discussed below and are summarized in tabular form in **Appendix D**. Included in **Appendix D** are **Tables D-1 and D-2**, which give the "x" and "y" model coordinates for pumping and image wells, and the pumping rate simulated at each well location. Locations for wells included in the simulation are shown on **Figures 6 and 7**; the well locations represent sites for pumping wells in the target aquifer system and sites for image wells representing the assumed barrier boundaries

Model transmissivity was assigned a value of 29,000 gpd/ft to represent an average value for the study area for the 100-year projection. The 29,000 gpd/ft value is the average of operative transmissivities calculated for wells WH-1L and WH-2L at the Property, and is considered consistent and possibly conservatively small with respect to values reported for similar sediments in the north part of the Sacramento Valley.

Saturated thickness of the targeted aquifer zone at the Property (conglomerate unit of the Muddy Creek Formation) ranges from 200 to more than 640 feet. For purposes of modeling, a value of 500 feet was used for saturated thickness to represent the aquifer at the Property. This value is considered to be conservatively small, and the actual average saturated thickness from which wells could draw water is believed to be much larger.

Based on results of the gravity survey and analysis of detachment faulting in the White Hills, it was considered appropriate to simulate two cases. Case A simulates the White Hills as a barrier boundary to groundwater movement and uses a total water demand similar to that calculated for the proposed development. Case B simulates the White Hills as an area underlain by basin-fill deposits that provide a hydraulic connection between the Detrital and Hualapai groundwater basins and shows the total maximum demand that could be supplied adequately by the aquifer.

CONCEPTUAL MODEL

The hydrologic features and pumping regimens for the conceptual groundwater model are summarized as follows:

Case A:

- Barrier boundaries were assumed to be located east and west from Property, representing bedrock of the White Hills and Black Mountains, respectively. These boundaries are roughly defined by the Detrital and Blind Goddess faults. Locations for the barrier boundaries are shown on **Figure 6**.
- Image wells were simulated on the opposite side of each barrier boundary.
- Saturated thickness of the aquifer was assumed to be 500 feet.
- Aquifer parameters: Transmissivity (T) = 29,000 gpd/ft
Storage Coefficient (S) = 0.001
- 23 pumping wells were simulated on the Property; each well was assigned a continuous pumping rate of 440 gpm for a total demand of 16,320 af/yr **(Figure 6; Table D-1 in Appendix D).**

- 46 image wells were simulated in the model, and were each assigned a pumping rate of 440 gpm to represent production pumping effects **(Figure 6; Table D-1 in Appendix D).**

- Total simulation time = 100 years

- Existing well pumpage was not simulated in the model.

Case B:

- A barrier boundary was assumed to be located west from Property, representing bedrock of the Black Mountains. This boundary is roughly defined by the Detrital fault. Location for the barrier boundary is shown on **Figure 7**.

- Image wells were simulated on the opposite side of the barrier boundary.

- Saturated thickness of the aquifer was assumed to be 500 feet.

- Aquifer parameters: Transmissivity (T) = 29,000 gpd/ft
  Storage Coefficient (S) = 0.001

- 23 pumping wells were simulated on the Property; each well was assigned a continuous pumping rate of 600 gpm for a total demand of 22,260 af/yr **(Figure 7; Table D-2 in Appendix D).**

- 23 image wells were simulated in the model, and were each assigned a pumping rate of 600 gpm to represent production pumping effects **(Figure 7; Table D-2 in Appendix D).**

- Total simulation time = 100 years

- Existing well pumpage was not simulated in the model.

PROJECTION OF 100-YEAR GROUNDWATER LEVEL DRAWDOWN

Results of model projections for a 100-year pumping period are summarized as follows:

Case A: 16,320 af/yr

- Simulations were conducted to project groundwater level drawdown for 100 years of pumping. Two boundaries were simulated. Recharge was not included in the model projection.
- Simulations were conducted for a 100-year period. Pumping rates were based on projected future pumping rates.
- Maximum groundwater level drawdown from all sources of pumping is about 846 feet at Pumping Well 9 **(Table D-1)**.
- A hydrograph of projected groundwater level drawdown for the 100-year pumping period at the point of maximum drawdown in the well field is shown on **Figure 8**.
- Projected 100-year impacts of pumping for water supply for the proposed development indicate that less than 846 feet of drawdown will be required to meet the needs of the development, and sufficient groundwater is available to serve the development and meet all ADWR requirements.

Case B: 22,260 af/yr

- Simulations were conducted to project groundwater level drawdown for 100 years of pumping. One boundary was simulated. Recharge was not included in the model projection.
- Simulations were conducted for a 100-year period. Pumping rates were based on projected future pumping rates.

- Maximum groundwater level drawdown from all sources of pumping is about 850 feet at Pumping Well 9 **(Table D-2)**.

- A hydrograph of projected groundwater level drawdown for the 100-year pumping period at the point of maximum drawdown in the well field is shown on **Figure 9**.

- Projected 100-year impacts of pumping indicate a maximum water demand of 22,260 af/yr could be supplied adequately with less than 850 feet of drawdown in the aquifer.

REFERENCES CITED

Allen, Stephenson & Associates, 2002, **Preliminary geologic, geophysical and hydrologic assessment: 32,000 undeveloped acres within the White Hills of Mohave County, Arizona**: Prepared for The Ranch at White Hills.

Anderson, T.W., Freethey, G.W., and Tucci, P., 1992, **Geohydrology and water resources of alluvial basins in south-central Arizona and parts of adjacent States:** U.S. Geological Survey Professional Paper 1406-B, 67 p.

Blair, W.N., and Armstrong, A.K., 1979, **Hualapai Limestone Member of the Muddy Creek Formation: The youngest deposit predating the Grand Canyon, southeastern Nevada and northwestern Arizona**: U.S. Geological Survey Professional Paper 1111.

Bohannon, R.G., 1984, **Nonmarine sedimentary rocks of Tertiary age in the Lake Mead region, southeastern Nevada and northwestern Arizona**: U.S. Geological Survey Professional Paper 1259.

Cooper, Jr., H. H., and Jacob, C. E., 1946, **A generalized graphical method for evaluating formation constants and summarizing well-field history:** American Geophysical Union Transactions, v. 27, No. 4, August 1946, pp. 526-534.

Dillenburg, R.A., 1987, **Maps showing groundwater conditions in the Detrital Wash Basin, Mohave County, Arizona –1987:** Arizona Department of Water Resources Hydrologic Map Series Report Number 14, scale 1:125,000, June 1987.

Duebendorfer, E.M., and Wallin, E.T., 1991, **Basin development and syntectonic sedimentation associated with kinematically coupled strike-slip and detachment faulting, southern Nevada**: Geology, v. 19, p. 87-90.

Duebendorfer, E.M., and Black, R.A., 1992, **Kinematic role of transverse structures in continental extension: An example from the Las Vegas Valley shear zone, Nevada**: Geology, v. 20, p. 1107-1110.

Duebendorfer, E.M., and Sharp, W.D., 1998a, **Variation in the displacement along strike of the South Virgin-White Hills detachment fault: Perspective from the northern White Hills, northwestern Arizona**: Geological Society of America Bulletin, v. 110, p. 1574-1589.

Duebendorfer, E.M., Beard, L.S., and Smith, E.I., 1998b, **Restoration of Tertiary deformation in the Lake Mead region, southern Nevada: The role of strike-slip transfer faults**: Geological Society of America Special Paper 323, p. 127-148.

Duebendorfer, E.M., Chamberlain, K.R., and Jones, C.S., 2001, **Paleoproterozoic tectonic history of the Cerbat Mountains, northwestern Arizona: Implications for crustal assembly in the southwestern United States**: Geological Society of America Bulletin, v. 113, p. 575-590.

Faulds, J.E., 1993, **Geologic map of the Black Mountains accommodation zone, northwestern Arizona**: Arizona Geological Survey Contributed Map CM-93-F.

_____, 1999, **Cenozoic geology of the northern Colorado River extensional corridor, southern Nevada and northwest Arizona**: Road logs and discussion: Nevada Petroleum Society Guidebook, p. 1-96.

Faulds, J.E., Schreiber, B.C., Reynolds, S.J., Gonzalez, L.A., and Okaya, D., 1997, **Origin and paleogeography of an immense, nonmarine Miocene salt deposit in the Basin and Range (Western USA):** Journal of Geology, v. 105, P. 19-36.

Faulds, J.E., and Varga, R., 1998, **The role of accommodation zones and transfer zones in the regional segmentation of extended terranes**: Geological Society of America Special Paper 323, p. 1-46.

Faulds, J.E., Feuerbach, D.L., Miller, C.F., and Smith, E.I., 2001, **Cenozoic evolution of the northern Colorado River extensional corridor, southern Nevada and northwest Arizona**: Pacific Section of the American Association of Petroleum Geologists Publication GB 78 (also Utah Geological Association Publication 30), p. 239-272.

Geo/Resource Consultants, Inc., 1982, **Groundwater resources and water quality of Detrital and Hualapai Basins, Mohave County, Arizona**: report prepared for U.S. Bureau of Land Management, 884 p., 6 figs., 3 plates.

Gillespie, J.B., and Bentley, C.B., 1971, **Geohydrology of Hualapai and Sacramento Valleys, Mohave County, Arizona:** U.S. Geological Survey Water Supply Paper 1899-H, 1971.

Heath, R., 1989, **Basic ground-water hydrology**: U. S. Geological Survey Water Supply Paper 2220, 84 p.

hydroGEOPHYSICS, Inc, 2002, **Report on gravity surveying for the Detrital Valley – White Hills Ranch area, Mohave County, Arizona**: Prepared for Leonard Mardian, Arizona Land Development, Inc.

_____, 2005, **Gravity results for Detrital Valley, Mohave County, Arizona**: Technical memorandum prepared for Errol L. Montgomery & Associates, Inc.

Laney, R.L., 1979, **Geohydrologic reconnaissance of Lake Mead National Recreation Area – Hoover Dam to Temple Bar, Arizona**: U.S. Geological Survey Open-File Report 79-689.

Longwell, C.R., 1928, **Geology of the Muddy Mountains, Nevada**: U.S. Geological Survey Bulletin 798.

_____, 1936, **Geology of the Boulder Reservoir floor, Arizona-Nevada**: Geological Society of America Bulletin, v. 47, p. 1393-1476.

Montgomery & Associates, Inc., Errol L., 2005, **Regional hydrogeology, source of water supply, and projected 100-year drawdown impacts in the vicinity of The Villages at White Hills, Mojave County, Arizona**: Prepared for Rhodes Homes – Arizona LLC, March 2005.

Oppenheimer, J.M., and Sumner, J.S., 1980, **Regional geophysics assessment of Southwest Alluvial Basins:** University of Arizona, final report for U.S. Geological Survey contract no. 14-08-0001-18228, 50 p.

Price, L.M., and Faulds, J.E., 1999, **Structural development of a major segment of the Colorado Plateau-Basin and Range boundary, southern White Hills, Arizona**: Nevada Petroleum Society Guidebook, p. 139-170.

Rascona, S.J., 1991, **Map showing groundwater conditions in the Sacramento Valley Basin, Mohave County, Arizona – 1991:** Arizona Department of Water Resources Hydrologic Map Series Report Number 21, scale 1:125,000, June 1991.

Richard, S.M., 2004, **Digital spatial data for the Geologic Map of Arizona:** Arizona Geological Survey Digital Information Series 08, Version 3.0.

Richard, S.M., Reynolds, S.I., Spencer, J.E., and Pearthree, P.A., 2000, **Geologic Map of Arizona:** Arizona Geological Survey Map 35, scale 1:1,000,000

Theis, C.V., 1935, **The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage:** American Geophysical Union Transactions, vol. 16, pp. 519-524.

U.S. Environmental Protection Agency, July 2002, **List of contaminants & their Maximum Contaminant Level (MCLs):** U.S. Environmental Protection Agency, Office of Ground Water and Drinking Water, Washington, DC.

van der Heijde, P.K.M., 1996, **THWELLS, Flow in an** (sic) **confined, leaky confined or unconfined aquifer with regional uniform flow and multiple wells:** International Ground Water Modeling Center, Golden, Colorado, 83 p.

Western Regional Climate Center, 2005, **Western U.S. Climate Historical Summaries**: Website at http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?azkin2.

Wilson, R.P., and Owen-Joyce, S.J., 1994, **Method to identify wells that yield water that will be replaced by Colorado River water in Arizona, California, Nevada, and Utah:** United States Geological Survey Water-Resources Investigations Report 94-4005, Plates 5 and 7.

ERROL L. MONTGOMERY & ASSOCIATES, INC.

TABLES

TABLES

Table

1 WELL INVENTORY FOR DETRITAL VALLEY, MOHAVE COUNTY, ARIZONA

2 RESULTS OF LABORATORY CHEMICAL ANALYSES FOR GROUNDWATER SAMPLES OBTAINED FROM WELLS IN AREA OF THE VILLAGES AT WHITE HILLS, MOHAVE COUNTY, ARIZONA

TABLE 1. WELL INVENTORY FOR DETRITAL VALLEY
MOHAVE COUNTY, ARIZONA

ADWR 55-WELL REGISTRY NUMBER	ADWR 35-WELL REGISTRY NUMBER	GWSI SITE ID	RECORD SOURCE	WELL IDENTIFIER	WELL NAME/ INDEX WELL	UTM COORDINATES (NAD 27) Easting (meters)	UTM COORDINATES (NAD 27) Northing (meters)	DATE COMPLETED	WELL DEPTH (feet, bls)	CASING DEPTH (feet, bls)	CASING DIAMETER (inches)	CASING PERFORATED INTERVAL (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL DATE	WATER LEVEL DEPTH (feet, bls)	WATER LEVEL ALTITUDE (feet, msl)	WELL / WATER USE	LOG	REPORTED PUMPING RATE (gpm)	REPORTED TESTING RATE (gpm)	OWNER
647052			55	(B-23-18) 06		205,331.50	3,923,334.30	1/1/1965	300	200	8				150.00				5	5	MABERRY, J L
647053			55	(B-23-18) 06		205,331.50	3,923,334.30	1/1/1964	180	90	8				100.00		H		3	3	JOYCE D MABERRY
562737			55	(B-23-18) 06 ACA		205,838.70	3,923,630.30	8/16/2000	355	355	5				-		H	X	5	9	CHRISTOPHER BROWN
	13824		35	(B-23-18) 06 ADB		205,836.60	3,923,625.10	4/8/1969	300	300	8				225.00		Pr H	X	10		COLLINS, ERNEST
505451			55	(B-23-18) 07 BCB		204,595.20	3,922,034.10	6/22/1983	625	-	0				-		H A	X	-	-	TENNISON, L
517160			55	(B-23-19) 07 CCA		195,189.60	3,921,484.90		-	-	0				-		None ME		-	-	GALLI EXPLORATION
517159			55	(B-23-19) 18		195,655.30	3,920,367.10	1/22/1988	300	-	6				-		None ME A	X	-	-	GALLI EXPLORATION
520236			55	(B-23-19) 18 BCA		195,161.90	3,920,683.40	1/25/1988	200	-	0				-		None ME A	X	-	-	GEXA GOLD CORP
536684			55	(B-23-20) 01 DAC		194,640.50	3,923,226.10		-	-	0				-		O Pr S		-	-	HAMILTON, BILL TRUST
625762			55	(B-23-20) 11 CBA		191,977.30	3,921,907.60	1/1/1959	800	500	6				300.00		H S		20	20	MAC EWEN,W
651173			55	(B-24-18) 08 CCA		206,750.00	3,930,799.00		110	90	2				60.00		H S		20	20	HAMILTON, C
642320		352600114145701	55	(B-24-18) 30 CCD		204,937.30	3,925,810.00	1/1/1972	-	-	0				-		S		-	-	BLM-PHOENIX DISTRICT
642320		352600114145701	GWSI	(B-24-18) 30 CCD		205,020.58	3,925,753.05		-	-			3,805	7/5/1984	24.80	3,780.20	U				
534183			55	(B-24-18) 30 CDC		205,144.70	3,925,804.60	2/8/1992	955	925	6				80.00		P	X	-	-	CHLORIDE WATER CORP
534238			55	(B-24-18) 30 CDC		205,144.70	3,925,804.60	3/4/1992	830	831	24				80.00		P	X	-	-	CHORIDE WATER CORP
	13866		35	(B-24-18) 32 CAC		206,751.40	3,924,594.80		-	-					-		Pr H		-		
		352939114163801	GWSI	(B-24-19) 02 DCA		202,896.87	3,932,587.43		-	-			3,530		-	-	S				HAMILTON
651159			55	(B-24-19) 02 DCB		202,529.90	3,932,524.60		110	110	2				70.00		H S		2	2	HAMILTON, C W
204715			55	(B-24-19) 03 ABB		200,949.60	3,933,513.20		1,000	1,000	5				490.00		S	X	-	-	CHARLES W HAMILTON IRREVO
543512			55	(B-24-19) 05 BBB		196,929.00	3,933,646.40		-	-	0				-		H		-	-	REDMOND, JENAI, P
557970			55	(B-24-19) 05 CCC		196,881.00	3,932,565.70	6/18/1996	950	950	7				840.00		H	X	7	7	TURNER, MIKE
547733			55	(B-24-19) 07 AAD		196,671.00	3,932,193.80	2/2/1995	925	925	7				860.00		H	X	10	10	MEEMAR, FEREIDON
205285			55	(B-24-19) 07 DDA		196,640.70	3,931,188.90		-	-	0				-		H		7	7	HERBERT W MASON JR
		352918114192801	GWSI	(B-24-19) 08 AAD		198,389.57	3,932,083.65		30	30			3,150	7/4/1984	-	-	U				
641575			55	(B-24-19) 22 D		201,066.30	3,927,910.10	7/29/1969	435	410	8				250.00		Capped		6	6	BECK ET AL, P
547203			55	(B-24-20) 13 BDD		194,271.50	3,930,086.20	11/16/1995	305	-	7				-		H	X	-	-	SMITH, GARY, C
582148			55	(B-24-20) 19 BBC		185,619.80	3,929,181.60	7/28/2000	1,205	20	5				-		H	X	-	-	RICHARD & BREND VECELLIO
568905			55	(B-24-20) 23 ABA		193,025.80	3,929,120.40		-	-	0				-		H		-	-	CHARLIE MANOR
593671			55	(B-24-20) 23 ABA		193,025.80	3,929,120.40		970	970	5				840.00		H	X	-	-	CHARLIE MANOR
537890			55	(B-24-20) 23 BDD		192,603.60	3,928,530.80	5/12/1993	988	988	6				850.00		H	X	5	10	SHELLY, LORENZO
533839			55	(B-24-20) 29 CCC		187,088.90	3,926,309.40		-	-	0				-		H		-	-	SOLOMON, NORMAN, J
543684			55	(B-24-20) 33 ABD		189,691.50	3,925,812.10		-	-	0				-		H		-	-	MCGOWAN, TARA, L
584485			55	(B-24-20) 33 BAD		189,289.00	3,925,826.50	7/30/2001	1,280	1,270	5				1,240.00		H	X	-	-	CAROLINE KING
606684			55	(B-25-18) 16 BB		208,331.50	3,939,588.30		-	-	0				-		S		-	-	DESERT EMPIRE INC
		353310114140501	GWSI	(B-25-18) 17 BC		206,767.30	3,938,963.57		-	-			3,800		-	-	S				
		353200114143001	GWSI	(B-25-18) 19 DCA		206,065.52	3,936,826.71		-	-			3,700		-	-	S				
801613	13879		35	(B-25-19) 01		204,196.90	3,942,345.80	2/15/1968	520	-	8				-		Pr H	X	640		SANDBERG, NONA
801613	13879		55	(B-25-19) 01 BAD		204,110.80	3,942,853.10	2/15/1968	520	-	8				-		H		640	640	ECKLES ETAL, J E
606511	13880	353520114160501	55	(B-25-19) 01 B		203,805.70	3,942,763.10	2/25/1972	800	600	8				412.00		H		72	72	MT TIPTON WATER CO
606511	13880	353520114160501	35	(B-25-19) 01 BAB		203,915.10	3,943,062.40	2/23/1972	800	600	8				400.00		Pr H	X	90		MT TIPTON WTR CO INC
606511	13880	353520114160501	GWSI	(B-25-19) 01 BAB		203,877.62	3,943,070.40		800	600			3,430		-	-	P				MOUNT TIPTON WATER CO
606511		353520114160501	55	(B-25-19) 01 BBC		203,508.70	3,942,971.90	12/8/1[illegible]	700	700	[illegible]				350.00		[illegible]	[illegible]	[illegible]		MT TIPTON WATER CO
606511		353520114160501	GWSI	(B-25-19) 01 BBC		203,582.30	3,942,864.80		700	700					-						TIPTON WATER CO
540280			55	(B-25-19) 01 CCC		203,473.80	3,941,660.40	11/21/1993	1,200	-	0				540.00		B H	X	-	-	MT TIPTON WATER CO
601641	13881	353434114182701	35	(B-25-19) 03 CCC		200,259.10	3,941,775.90	5/24/1978	715	715	6				715.00		Pr H	X	12		BATES, HARRY
601641	13881	353434114182701	55	(B-25-19) 03 CCC		200,259.10	3,941,775.90	5/1/1978	715	715	6				590.00		H		15	15	BATES, H L
601641	13881	353434114182701	GWSI	(B-25-19) 03 CCC		200,254.55	3,941,772.06		715	715			3,122	4/20/1987	601.30	2,521.00	H				HARRY BATES
561143			55	(B-25-19) 09 ACD		199,628.10	3,940,991.90	4/8/1997	875	875	7				760.00		H S	X	7	6	PARKER, DANIEL
204304			55	(B-25-19) 09 ADC		199,827.90	3,940,984.80	8/19/2004	930	930	5				760.00		H	X	7	7	ALLEN E & EVELY TOBIN TRUSTEES
503892			55	(B-25-19) 09 BC		198,731.90	3,941,124.80	10/26/1982	750	750	6				665.00		H	X	-	-	LONG, J
581711			55	(B-25-19) 09 BDD		199,228.50	3,941,006.10	7/20/2000	865	865	5				750.00		H	X	-	-	JIM & PEGGY HAMM
	13882	353353114171801	35	(B-25-19) 11 CBD		202,025.00	3,940,504.00	1/26/1978	700	700	6				600.00		Pr H	X	6		KNOX, MAJORIE
	13882	353353114171801	GWSI	(B-25-19) 11 CBD		201,949.93	3,940,460.05		700	700			3,280		-	-	H				MARJORIE KNOX
571507			55	(B-25-19) 17 BDA		197,579.80	3,939,651.90		-	-	0				-		H		-	-	PAUL ALLEN
579319			55	(B-25-19) 17 BDA		197,579.80	3,939,651.90	3/30/2000	860	860	5				750.00		H	X	-	-	PAUL ALLEN
583133			55	(B-25-19) 17 BDA		197,579.80	3,939,651.90		-	-	0				-				-	-	PAUL ALLEN
200166			55	(B-25-19) 17 BDD		197,572.40	3,939,451.80	10/21/2003	810	810	5				743.00		H	X	-	5	KENNETH BARKER
585823			55	(B-25-19) 17 CBA		197,164.40	3,939,265.80	4/2/2001	905	890	5				860.00		H	X	5	5	DANIEL C SANCHEZ
612456	13883	353251114201001	35	(B-25-19) 17 CDD		197,542.90	3,938,650.90	5/30/1967	840	840	9				50.00		Pr H	X	8		McKELLAR, ROBERT
612456	13883	353251114201001	55	(B-25-19) 17 CDD		197,542.90	3,938,650.90	5/31/1967	800	800	10				726.00		H		15	15	SHERRIE DOTSON
612456	13883	353251114201001	GWSI	(B-25-19) 17 CDD		197,600.31	3,938,590.64		840	840			3,020	11/7/1995	775.00	2,245.00	U				ROBERT MC KELLER

ERROL L. MONTGOMERY & ASSOCIATES, INC.

TABLE 1. WELL INVENTORY FOR DETRITAL VALLEY
MOHAVE COUNTY, ARIZONA

ADWR 55-WELL REGISTRY NUMBER	ADWR 35-WELL REGISTRY NUMBER	GWSI SITE ID	RECORD SOURCE	WELL IDENTIFIER	WELL NAME/ INDEX WELL	UTM COORDINATES (NAD 27) Easting (meters)	UTM COORDINATES (NAD 27) Northing (meters)	DATE COMPLETED	WELL DEPTH (feet, bls)	CASING DEPTH (feet, bls)	CASING DIAMETER (inches)	CASING PERFORATED INTERVAL (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL DATE	WATER LEVEL DEPTH (feet, bls)	WATER LEVEL ALTITUDE (feet, msl)	WELL / WATER USE	LOG	REPORTED PUMPING RATE (gpm)	REPORTED TESTING RATE (gpm)	OWNER
598885			55	(B-25-19) 18 CDD		195,936.20	3,938,703.80		-	-	0				-		C S		-	-	ARIZONA ACREAGE LLC
598886			55	(B-25-19) 18 CDD		195,936.20	3,938,703.80		-	-	0				-		C S		-	-	ARIZONA ACREAGE LLC
582738			55	(B-25-19) 19 DCA		196,289.50	3,937,273.70	2/28/2001	908	908	5				737.00		H	X	-	-	RICHARD GILLESPIE
510178		353232114200501	55	(B-25-19) 20 ACB		197,721.30	3,938,036.00	4/20/1985	900	900	8				780.00		H	X	-	-	CHAMBERS, D
510178		353232114200501	GWSI	(B-25-19) 20 ACB		197,659.18	3,938,094.90		900	900			3,025		-	-	H				DON AND MEL CHAMBERS
510178		353232114200501	GWSI	(B-25-19) 20 ACB		197,659.18	3,938,094.90		900	900			3,025		-	-	H				MT TIPTON WATER CO.
584112			55	(B-25-19) 20 BAD		197,527.30	3,938,245.60		-	-	0				-		H		-	-	DOUGLAS GARDNER
547025			55	(B-25-19) 20 BCA		197,119.90	3,938,057.30		-	-	0				-		H R		-	-	SPACE UNIVERSAL LIFE
544995			55	(B-25-19) 21 BAA		199,138.20	3,938,390.90	7/21/1994	660	-	0				-		C B A	X	-	-	MT TIPTON WATER CO
553126			55	(B-25-19) 23 BBB		201,753.50	3,938,296.60	1/10/1996	830	-	7				780.00		H	X	-	-	JAIME, FREDRICK, G
503756			55	(B-25-19) 25 AAA		204,710.50	3,936,582.80	11/13/1982	580	580	7				480.00		H	X	10	10	DISMUKES, EFFIE
204589			55	(B-25-19) 29 CAA		197,452.20	3,936,026.10		-	-	0				-		H		-	-	ANTHONY JOSEPH SY
650952	13884	355155114204301	35	(B-25-19) 30 AAA		196,677.00	3,936,856.30	2/25/1966	955	30	8				155.00		Pr H	X	35		BILLMAN, LEONARD
650952	13884	355155114204301	55	(B-25-19) 30 AAA		196,677.00	3,936,856.30	4/3/1966	955	926	6				800.00		H	X	35	50	HAN, SEUNG HWAN
650952	13884	355155114204301	GWSI	(B-25-19) 30 AAA		196,710.32	3,936,892.72		955	955			3,000	4/20/1987	772.40	2,227.60	H				E WINDOLPH
650952	13884	355155114204301	GWSI	(B-25-19) 30 AAA		196,710.32	3,936,892.72		955	955			3,000	4/20/1987	772.40	2,227.60	H				SEUNG HWAN HAN
605883	13885	355151114202001	55	(B-25-19) 30 BBA		195,471.00	3,936,892.40	7/7/1960	825	825	8				705.00		U				
605883	13885	355151114202001	55	(B-25-19) 30 BBA		195,471.00	3,936,892.40	7/20/1960	825	825	8				705.00		U				AHMAD, MOHAMMED I
605883	13885	355151114202001	GWSI	(B-25-19) 30 BBA		195,406.83	3,936,910.50		825	825			2,810	11/7/1995	717.90	2,092.10	U				LEONARD BILLMAN
605883	13885	355151114202001	GWSI	(B-25-19) 30 BBA		195,406.83	3,936,910.50		825	825			2,810	11/7/1995	717.90	2,092.10	U				MOHAMMED AHMAD
	13886		35	(B-25-19) 30 BBD		195,464.50	3,936,691.80	5/23/1966	825	30	8				90.00		Pr I	X	95		BILLMAN, LEONARD
637115	13887	353059114204301	35	(B-25-19) 31 AAA		196,624.30	3,935,249.90	11/26/1973	880	880	8				790.00		Pr H	X	10		GATEWAY DEVELOPMENT,
637115	13887	353059114204301	55	(B-25-19) 31 AAA		196,624.30	3,935,249.90	11/26/1973	880	880	6				790.00		H		10	10	MCDONALD, W B
637115	13887	353059114204301	GWSI	(B-25-19) 31 AAA		196,604.44	3,935,260.79		880	880			3,016	11/7/1995	783.40	2,232.00	H				RON ODLE
585883			55	(B-25-19) 31 ACD		196,203.60	3,934,658.40	3/13/2001	905	890	5				860.00			X	5	10	GARY W SIEGFRIED
573031			55	(B-25-19) 31 BBC		195,210.60	3,935,094.40	3/20/1999	860	860	5				760.00		H	X	10	10	VIRGIL R DARLING
598887			55	(B-25-20) 03 BAB		191,057.40	3,943,508.90		-	-	0				-		C S		-	-	GATEWAY LOTS LLC
555088			55	(B-25-20) 09 DCD		189,946.00	3,940,521.80	4/19/1996	945	938	10				750.00		H S	X	-	-	GATEWAY ACRES INC
589507			55	(B-25-20) 10 CBC		190,564.70	3,940,905.70	11/13/2001	780	780	5				670.00		H	X	12	12	RAYMOND GREGORY
552355			55	(B-25-20) 10 CDC		190,954.80	3,940,487.80	12/25/1995	770	770	7				670.00		I H	X	12	12	ADAMS, STUART
201083			55	(B-25-20) 11 ABA		193,206.90	3,941,816.20		802	802	7				576.00		I H	X	-	-	JEFFERY L WHEELER
645459	13888	353339114233501	35	(B-25-20) 11 CCD		192,361.50	3,940,437.90	1/1/1960	1,100	1,100	8				600.00		Pr H	X	-		GUSTOFSON, B
645459	13888	353339114233501	55	(B-25-20) 11 CDC		192,561.20	3,940,430.80	12/31/1985	800	800	8				576.00		H		-	-	GATEWAY ACRES
645459	13888	353339114233501	GWSI	(B-25-20) 11 CDC		192,439.61	3,940,340.90		800	800			2,807	11/7/1995	565.80	2,241.00	U				GATEWAY ACRES
637011			55	(B-25-20) 11 DD		193,463.40	3,940,499.10	1/1/1930	20	-	0				10.00		S		2	2	
621782			55	(B-25-20) 15 AAA		191,952.80	3,940,250.60		-	-	0				-		H S		-	-	ARIZONA ACREAGE LLC
637009			55	(B-25-20) 15 AAA		191,952.80	3,940,250.60	10/15/1948	650	650	8				500.00		S		20	20	ARIZONA ACREAGE LLC
		353337114235201	GWSI	(B-25-20) 15 AAA	Index	191,959.96	3,940,326.59		700	700			2,814	10/21/2003	596.80	2,217.20	S				E SMITH
085450			55	(B-25-20) 15 CDD		191,098.80	3,938,869.00	12/1/1980	730	730	6				630.00		H		10	10	DE COOPMAN, L
637010			55	(B-25-20) 31 BB		185,645.20	3,935,530.90	1/1/1960	120	20	8				80.00		S		2	2	TWIN LAKES RANCHES
553101			55	(B-25-20) 33 BDB		189,148.60	3,935,107.70	12/4/1995	800	20	7				-		H	X	-	-	LEWIS, DELBERT,L
540938		353017114234801	55	(B-25-20) 35 CCB		191,957.40	3,934,205.10	11/20/1993	950	20	7				-		H	X	-	-	REED, ERNEST, L
540938		353017114234801	GWSI	(B-25-20) 35 CCB		191,897.38	3,934,125.72		950	950			3,002		-	-	H				ERNEST L REED
[illegible]		[illegible]	[illegible]	(B-25-20) 35 ADD		[illegible]	[illegible]		[illegible]	[illegible]					[illegible]						[illegible]
[illegible]		[illegible]	[illegible]	(B-25-20) 35 DAB		[illegible]	[illegible]		[illegible]	[illegible]					[illegible]						[illegible]
601846	13922	353537114162001	35	(B-26-19) 35 AB		202,868.10	3,944,607.00	1/1/1966	480	-	6				-		Pr H	X	90		
601846	13922	353537114162001	GWSI	(B-26-19) 35 CCB1		203,414.61	3,943,548.65		480	480			3,355	11/9/1995	-	-	P				DOLAN SPRINGS WATER CO
601846	13922	353537114162001	55	(B-26-19) 35 DDA		203,326.10	3,943,487.80	9/3/1966	480	465	8				330.00		P		90	90	DOLAN SPRINGS WTR CO
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					[illegible]						LAKE MOHAVE RANCHOS
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					[illegible]						DOLAN SPRINGS WTR CO
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					[illegible]						DOLAN SPRINGS WATER CO
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					[illegible]						
506004			55	(B-26-20) 05 BCC		187,753.00	3,952,684.80	8/24/1983	525	-	0				470.00		N A	X	-	-	BLM-KINGMAN DISTRICT
505703		354027114273101	GWSI	(B-26-20) 06 ACB	Index	187,028.56	3,952,843.50	7/27/1983	537	537	8-5/8	457-527	2,500	10/21/2003	460.70	2,039.30	U	X			BLM
505703		354027114273101	55	(B-26-20) 06 ADA		187,558.80	3,952,896.40	7/27/1983	537	537	9				465.00		N	X	-	-	BLM-KINGMAN DISTRICT
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					[illegible]						BLM-KINGMAN DISTRICT
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					[illegible]						BLM
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					[illegible]						
502441		353658114244401	55	(B-26-20) 27 BCD		190,945.50	3,946,132.70	5/14/1982	610	640	8				455.00		N	X	194	181	US DEPT OF INTERIOR/ BURE
502441		353658114244401	GWSI	(B-26-20) 27 BDC		191,078.68	3,946,189.88		640	640			2,675	11/7/1995	455.40	2,219.60	S				DEPARTMENT OF INTERIOR
513157			55	(B-26-21) 14		183,529.40	3,949,516.00		-	-	0				-		None ME		-	-	KYLLO & NOON
562082			55	(B-27-19) 07 CAA		196,645.50	3,960,230.80	6/24/1998	735	735	8				560.00		H	X	25	40	G H R DELVP INC
573971			55	(B-27-19) 09 BCC		199,243.90	3,960,337.10	7/8/1999	887	887	5				686.00		H	X	8	8	RAYMOND WOOLEVER

ERROL L. MONTGOMERY & ASSOCIATES, INC.

TABLE 1. WELL INVENTORY FOR DETRITAL VALLEY
MOHAVE COUNTY, ARIZONA

ADWR 55-WELL REGISTRY NUMBER	ADWR 35-WELL REGISTRY NUMBER	GWSI SITE ID	RECORD SOURCE	WELL IDENTIFIER	WELL NAME/ INDEX WELL	UTM COORDINATES (NAD 27) Easting (meters)	UTM COORDINATES (NAD 27) Northing (meters)	DATE COMPLETED	WELL DEPTH (feet, bls)	CASING DEPTH (feet, bls)	CASING DIAMETER (inches)	CASING PERFORATED INTERVAL (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL DATE	WATER LEVEL DEPTH (feet, bls)	WATER LEVEL ALTITUDE (feet, msl)	WELL / WATER USE	LOG	REPORTED PUMPING RATE (gpm)	REPORTED TESTING RATE (gpm)	OWNER
587083			55	(B-27-19) 09 CAC		199,634.80	3,959,920.60	6/23/2001	930	930	5				880.00		H	X	-	-	GLEN & SHERRY PRATT
512241			55	(B-27-19) 09 CCC		199,219.80	3,959,531.80	11/20/1985	750	750	7				650.00		H	X	5	5	DARLING, C R
587712			55	(B-27-19) 09 CDA		199,829.80	3,959,712.40	8/1/2001	905	905	5				860.00		H	X	12	5	AL SIMONETTI
642196		354402114194001	55	(B-27-19) 17		198,286.00	3,958,683.10	1/1/1964	750	704	6				580.00		P		30	30	WHITE HILLS WATER CO
642196		354402114194001	GWSI	(B-27-19) 17 AAA		199,082.90	3,959,277.78		750	750			3,635	11/10/1995	621.70	3,013.30	P				WHITE HILLS WATER CO
587342			55	(B-27-19) 17 ABB		198,409.70	3,959,359.90	6/25/2001	830	827	5				765.00		C	X	-	-	KALAMAZOO MATERIALS INC
594398			55	(B-27-19) 17 DCC		198,365.90	3,957,960.40	11/20/2002	700	700	5				-		H	X	12	-	TERI BEGAY
204237			55	(B-27-19) 17 DDD		198,968.40	3,957,943.90		700	700	5				560.00		H	X	-	-	SIMON THOMPSON TRUBY III
576840			55	(B-27-19) 17 DDD		198,968.40	3,957,943.90	9/16/1999	665	665	4				580.00		H	X	11	11	WILLIAM MOODY
	13941		35	(B-27-19) 35 BDA		202,873.80	3,953,961.10		100	-					65.00		Pr S		-		
547882			55	(B-27-20) 05		188,781.50	3,962,233.40		-	-	0				-		None ME A		-	-	US BORAX INC
551185			55	(B-27-20) 09 ACC		190,434.30	3,960,665.80	3/21/1996	835	835	8				570.00		C	X	20	20	WHITE HILLS WATER CO
583552			55	(B-27-20) 09 ADD		191,034.10	3,960,643.90	10/18/2000	730	730	6				690.00		H	X	10	15	BARNEY GIZOWSKI
594554			55	(B-27-20) 09 CCC		189,609.50	3,959,890.80		863	20	9				-		H	X	-	-	FRANK CARTER
594399			55	(B-27-20) 09 CCD		189,809.80	3,959,883.90		1,365	1,365	6				456.00		H	X	-	-	MARY VALADEZ
543603			55	(B-27-20) 11		193,556.30	3,960,452.40	6/1/1994	460	-	0				-		None ME	X	-	-	WESTERN STATES
601764	13942	354344114225701	35	(B-27-20) 14 ADC		194,008.10	3,958,934.10	6/11/1979	615	100	6				480.00		Pr ME	X	17		ARIZONA SILVER INC.
601764	13942	354344114225701	55	(B-27-20) 14 ADC		194,008.10	3,958,934.10	9/12/1979	615	100	6				490.00		M		10	10	AZ SILVER CORP
601764	13942	354344114225701	GWSI	(B-27-20) 14 DAB		194,029.53	3,958,879.25		615	615			2,960	5/5/1987	503.80	2,456.00	U				CORVAL DEV COMPANY
589067			55	(B-27-20) 14 DAB		194,001.00	3,958,734.40	10/16/2001	630	630	5				480.00		H	X	-	-	WILLIAM EVERSOLE
538468			55	(B-27-20) 15 ADD		192,596.90	3,958,984.70		-	-	0				-		C		-	-	EVERSOLE, WILLIAM
531420			55	(B-27-20) 16 AAA		190,999.80	3,959,640.90		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
534870			55	(B-27-20) 16 AAA		190,999.80	3,959,640.90		-	-	0				-		C I		-	-	EVERSOLE, WILLIAM
901780			M&A	(B-27-20) 16 DAA	WH-2 L	190,968.70	3,958,893.30	4/2005	1,420	1,019	8		2,627	4/2/2005	435.00		N			-	SEDORA HOLDINGS, LLC
531418			55	(B-27-20) 18 AAA		187,791.30	3,959,753.80		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
534872			55	(B-27-20) 18 AAA		187,791.30	3,959,753.80		-	-	0				-		C I		-	-	EVERSOLE, WILLIAM
528471			55	(B-27-20) 19 AAA		187,729.80	3,958,128.80		-	-	0				-		T		-	-	EVERSOLE, WILLIAM
532210			55	(B-27-20) 19 AAA		187,729.80	3,958,128.80		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
536203			55	(B-27-20) 19 AAA		187,729.80	3,958,128.80		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
528273			55	(B-27-20) 20 CCC		187,877.20	3,956,720.10		-	-	0				-		T		-	-	WILLIAM EVERSOLE
532064			55	(B-27-20) 20 CCC		187,877.20	3,956,720.10		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
536066			55	(B-27-20) 20 CCC		187,877.20	3,956,720.10		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
538470			55	(B-27-20) 21 BAD		190,135.60	3,957,850.00	4/20/1993	1,000	-	0				-		C A	X	-	-	WHITE HILLS MINERAL
528853			55	(B-27-20) 21 BBB		189,543.20	3,958,068.80		-	-	0				-		T		-	-	EVERSOLE, WILLIAM
532515			55	(B-27-20) 21 BBB		189,543.20	3,958,068.80		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
536473			55	(B-27-20) 21 BBB		189,543.20	3,958,068.80		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
583406			55	(B-27-20) 21 CCC		189,495.10	3,956,655.40	9/14/2001	655	655	5				554.00		H	X	-	-	GERALD M RHOADS
585019			55	(B-27-20) 21 DCC		190,294.00	3,956,630.50		553	655	5				553.00		H	X	-	-	GERALD M RHOADS
531417			55	(B-27-20) 28 DDD		190,844.80	3,955,004.60		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
534869			55	(B-27-20) 28 DDD		190,844.80	3,955,004.60		-	-	0				-		C I		-	-	EVERSOLE, WILLIAM
528748			55	(B-27-20) 29 AAA		189,285.40	3,956,461.80		-	-	0				-		T H		-	-	EVERSOLE, WILLIAM
532454			55	(B-27-20) 29 AAA		189,285.40	3,956,461.80		-	-	0				-		I C		-	-	EVERSOLE, WILLIAM
536362			55	(B-27-20) 29 AAA		189,285.40	3,956,461.80		-	-	0				-		C		-	-	EVERSOLE, WILLIAM
576054			55	(B-27-20) 29 ABB		188,677.60	3,956,486.30	11/10/1999	635	635	5				540.00			X	32	25	JAMES N KING
597876			55	(B-27-20) 29 ABD		188,873.30	3,956,277.40		665	665	7				555.00		I H	X	-	-	K C CAMIS
580381			55	(B-27-20) 29 CBB		187,844.70	3,955,713.30	1/7/2001	420	-	0				-		H	X	-	-	DANIEL & OLIVIA HARTLEY
585092			55	(B-27-20) 29 CBB		187,844.70	3,955,713.30	5/9/2001	600	600	5				538.00		H	X	28	24	DANIEL & OLIVIA HARTLEY
203076			55	(B-27-20) 29 DBB		188,652.00	3,955,683.70		-	-	0				-		H		-	-	ROGER & KADY PEARSON
203376			55	(B-27-20) 29 DBB		188,652.00	3,955,683.70		-	-	0				-		H		-	-	EDWARD COUTURE
531419			55	(B-27-20) 30 DDD		187,626.30	3,955,118.00		-	-	0				-		I		-	-	EVERSOLE, WILLIAM
598605			55	(B-27-20) 31 AAA		187,618.80	3,954,915.80		-	-	0				-		H S		-	-	SILVER BASIN INC
598606			55	(B-27-20) 31 AAA		187,618.80	3,954,915.80		-	-	0				-		H S		-	-	SILVER BASIN INC
598603			55	(B-27-20) 31 ADC		187,400.90	3,954,318.60		-	-	0				-		H S		-	-	SILVER BASIN INC
598603			driller	(B-27-20) 31 ADC				6/25/2003	1,175	20	9-7/8		2,509					X			Silver Basin Inc.
598603			driller	(B-27-20) 31 ADC				6/25/2003	1,175	640	9-5/8	525 - 645	2,509	6/24/2003	460.00			X			Silver Basin Inc.
598603			55	(B-27-20) 31 ADC		187,400.90	3,954,318.60		-	-	0				-		H S		-	-	SILVER BASIN INC
598604			55	(B-27-20) 31 ADC		184,635.00	3,958,556.30	3/12/1968	550	-	10				-		H		75	75	EVERSOLE, WILLIAM
606080		354320114285901	55	(B-27-21) 13 CC		184,920.19	3,958,720.54		550	550			2,400	11/8/1995	384.00	2,016.00	P				K BAUER
606080		354320114285901	GWSI	(B-27-21) 13 CCA		184,729.50	3,958,461.00	6/10/2002	530	505	7				420.00		H	X	-	-	RAY THOMPSON
592212			55	(B-27-21) 13 CCC		185,143.11	3,957,910.15		460	460			2,405	10/28/1992	390.30	2,015.00	H				K BAUER
641386	13943	354251114284901	GWSI	(B-27-21) 24 BDA		185,100.80	3,957,636.40	8/14/1978	460	460	8				400.00		Pr H	X	50		BOULDER CTY AERO CLUB.
641386	13943	354251114284901	35	(B-27-21) 24 BDC																	

ERROL L. MONTGOMERY & ASSOCIATES, INC.

TABLE 1. WELL INVENTORY FOR DETRITAL VALLEY
MOHAVE COUNTY, ARIZONA

ADWR 55-WELL REGISTRY NUMBER	ADWR 35-WELL REGISTRY NUMBER	GWSI SITE ID	RECORD SOURCE	WELL IDENTIFIER	WELL NAME/ INDEX WELL	UTM COORDINATES (NAD 27) Easting (meters)	UTM COORDINATES (NAD 27) Northing (meters)	DATE COMPLETED	WELL DEPTH (feet, bls)	CASING DEPTH (feet, bls)	CASING DIAMETER (inches)	CASING PERFORATED INTERVAL (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL DATE	WATER LEVEL DEPTH (feet, bls)	WATER LEVEL ALTITUDE (feet, msl)	WELL / WATER USE	LOG	REPORTED PUMPING RATE (gpm)	REPORTED TESTING RATE (gpm)	OWNER
641388	13943	354251114284901	55	(B-27-21) 24 BDC		185,100.60	3,957,636.40	1/1/1978	460	460	8				400.00		H		30	30	BOULDER CITY AEROCLB
[illegible]		[illegible]	55	(B-27-21) 24 D		184,980.80	3,957,138.30	[illegible]	465	465	[illegible]				[illegible]		[illegible]		[illegible]		EVERSOLE, WILLIAM
[illegible]		[illegible]	GWSI	(B-27-21) 24 DDD		185,304.80	3,958,793.20		465	465			[illegible]				H				WILLIAM EVERSOLE
	13944		35	(B-27-21) 24 CDB		185,078.40	3,957,031.80	5/28/1973	464	464	8				31.00		Pr H	X	130		RUSSELL, Jessie
594553			55	(B-27-21) 25 ABC		185,457.90	3,956,410.10		513	505	7				415.00		C	X	-	-	JOHN MORALLY
204336			55	(B-27-21) 25 ACA		185,652.30	3,956,201.40		-	-	0						S M				ARIZONA LAND DEVELOPMENT
204336*			55	(B-27-21) 25 ACA					700	700	10						S M				ARIZONA LAND DEVELOPMENT
204336*			55	(B-27-21) 25 ACA					1,500	1,460	8-5/8						S M				ARIZONA LAND DEVELOPMENT
204336*			55	(B-27-21) 25 ACA					1,500	1,500	8-5/8	1480-1500			-		S M		-	-	ARIZONA LAND DEVELOPMENT
584114			55	(B-27-21) 25 ACA					870	870	[illegible]				420.00		C B	X	[illegible]		ARIZONA LAND DEVELOPMENT
584114			driller	(B-27-21) 25 ACA				5/5/2001	870	20	[illegible]		3,430	2/5/2001	420.00			X			ARIZONA LAND DEVELOPMENT
584114			driller	(B-27-21) 25 ACA				5/5/2001	870	870	[illegible]	510-530	3,430					X		100	ARIZONA LAND DEVELOPMENT
584114			driller	(B-27-21) 25 ACA				5/5/2001	870	870	[illegible]	810-830	3,430					X		100	ARIZONA LAND DEVELOPMENT
584114			driller	(B-27-21) 25 ACA					1,500	770	[illegible]		3,430	[illegible]	[illegible]						ARIZONA LAND DEVELOPMENT
584114			driller	(B-27-21) 25 ACA					1,500	1,500	[illegible]		3,430								ARIZONA LAND DEVELOPMENT
598610			55	(B-27-21) 25 ACA		185,652.30	3,956,201.40		-	-	0				-		C S		-	-	ARIZONA LAND DEVELOPMENT
598884			55	(B-27-21) 25 ACA		185,652.30	3,956,201.40		-	-	0				-		C S		-	-	ARIZONA LAND DEVELOPMENT
901986			M&A	(B-27-21) 25 ADC	WH-1 U	185,841.30	3,956,000.80	4/2005	540	540	8	460-530	2,437	4/12/2005	417.22	2,020.00	N				SEDORA HOLDINGS, LLC
901788			M&A	(B-27-21) 25 ADC	WH-1 L	185,833.70	3,956,008.40	3/2005	868	868	8						N				SEDORA HOLDINGS, LLC
901788*			M&A	(B-27-21) 25 ADC	WH-1 L	185,833.70	3,956,008.40	3/2005	2,005	1,425	6		2,437	4/4/2005	370.34	2,067.00	N				SEDORA HOLDINGS, LLC
[illegible]		[illegible]	[illegible]	(B-27-21) 25 AAA		185,283.40	3,958,810.40	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		LARSEN, ROSE C
[illegible]		[illegible]	GWSI	(B-27-21) 25 BAA		185,822.30	3,958,576.02		481	481			[illegible]	[illegible]	[illegible]	[illegible]	H				ROSE LARSEN
542957			55	(B-27-21) 25 BDC		185,040.60	3,956,022.30		-	-	0				-		H		-	-	THOMPSON, LAWRENCE,W
550438			55	(B-27-21) 25 BDD		185,242.10	3,956,014.90	1/8/1996	540	540	5				446.00		I	X	7	7	THOMPSON, LAWRENCE,W
577325			55	(B-27-21) 25 CAA		185,235.00	3,955,813.60		-	-	0				-		H		-	-	RICKY KEMP
588355			55	(B-27-21) 25 CAA		185,235.00	3,955,813.60		-	-	0				-		H		-	-	VELMA BLACKWELL
575891			55	(B-27-21) 25 CAB		185,033.50	3,955,820.80	11/7/1999	520	520	4				460.00		I	X	35	28	RICKY KEMP
205349			55	(B-27-21) 25 CCD		184,810.90	3,955,223.10		-	-	0				-		H		-	-	H G GIBSON
539173			55	(B-27-21) 25 CDB		185,019.30	3,955,417.90		-	-	0				-		H S		-	-	EDWARD L CLINE
805897		354151114282001	55	(B-27-21) 25 DDC		185,817.60	3,955,187.90	12/31/1950	600	600	8				40.00		S		30	-	SMITH, DALE, D
805897		354151114282001	GWSI	(B-27-21) 25 DDC		185,775.03	3,955,140.82		600	600			2,460	11/8/1995	-	-	H				DALE SMITH
	13945		35	(B-27-21) 25 DDC		185,817.60	3,955,187.90		500						435.00		Pr H	X	8		
642309			55	(B-27-21) 35 DD		184,272.50	3,953,717.10		-	-	0				-		S		-	-	BLM-PHOENIX DISTRICT
550571			55	(B-28-19) 10		201,906.20	3,969,810.10	8/1/1995	-	-	0				-		None ME	X	-	-	WESTERN STATES MNRLS
614907		354846114184701	55	(B-28-19) 16 DAC		200,714.70	3,967,943.80		-	-	6				-				-	-	AZ STATE LAND DEPT
614907		354846114184701	GWSI	(B-28-19) 16 DAC		200,637.91	3,968,050.89		200	200			4,075	7/3/1984	199.20	3,876.00	U				ARIZONA STATE LAND DEPT
805903			55	(B-28-19) 16 DAC		200,714.70	3,967,943.80	12/31/1955	200	200	6				160.00		S		-	-	ARIZONA ACREAGE LLC
581698			55	(B-28-19) 21 AAA		200,890.80	3,967,334.80	8/3/2000	695	695	5				250.00		M	X	-	-	KALAMAZOO MATERIALS INC
548572			55	(B-28-19) 23		203,394.80	3,966,548.40	1/31/1996	-	-	0				-		None ME	X	-	-	WESTERN STATES MNRLS
510960			55	(B-28-19) 25		204,948.40	3,964,885.00	5/20/1985	-	-	0				-		None ME A	X	-	-	AMOCO MINERALS CO
530262			55	(B-28-19) 25		204,948.40	3,964,885.00	6/30/1991	-	-	0				-		None ME	X	-	-	PRIME EXPLORATION
539141			55	(B-28-19) 25		204,948.40	3,964,885.00	6/5/1993	-	-	0				-		None ME A	X	-	-	CAMBIOR EXPLORATION
543604			55	(B-28-19) 25		204,948.40	3,964,885.00	4/30/1995	-	-	0				-		None ME	X	-	-	WESTERN STATES
548149			55	(B-28-19) 25		204,948.40	3,964,885.00	7/31/1995	-	-	0				-		None ME	X	-	-	WESTERN STATES MIN
558482			55	(B-28-19) 25		204,948.40	3,964,885.00	6/30/1997	-	-	0				-		None ME	X	-	-	NEVADA PACIFIC
562651			55	(B-28-19) 25		204,948.40	3,964,885.00		-	-	0				-		None A		-	-	NEVADA PACIFIC MININ
901060			55	(B-28-19) 25		204,948.40	3,964,885.00		-	-	0				-		None		-	-	AURUMBANK, INC
901062			55	(B-28-19) 25		204,948.40	3,964,885.00		-	-	0				-		None		-	-	AURUMBANK, INC
204338			55	(B-28-19) 29 DCC		198,583.40	3,964,406.20		-	-	0				-		S M		-	-	ARIZONA ACREAGE LLC
204338			driller	(B-28-19) 29 DCC					1,160	20	9-7/8		3,800					X			Arizona Acreage, LLC
204338			driller	(B-28-19) 29 DCC					1,160	1,130	8-5/8	1,000 - 1,120	3,800	2/1/2005	799.00			X			Arizona Acreage, LLC
598607			55	(B-28-19) 29 DCC		198,583.40	3,964,406.20		-	-	0				-		H S		-	-	ARIZONA ACREAGE LLC
598608			55	(B-28-19) 29 DCC		198,583.40	3,964,406.20		-	-	0				-		H S		-	-	ARIZONA ACREAGE LLC
204337			55	(B-28-19) 31 AAA		197,584.00	3,964,240.00		-	-	0				-		H S M		-	-	ARIZONA ACREAGE LLC
204337			driller	(B-28-19) 31 AAA					960	20	9-7/8		3,640					X			Arizona Acreage, LLC
204337			driller	(B-28-19) 31 AAA					960	920	8-5/8	820 - 920	3,640	2/1/2005	822.00			X			Arizona Acreage, LLC
512960			55	(B-28-20) 25		195,339.90	3,965,227.90	1/30/1986	-	-	0				-		None A	X	-	-	SANTA FE MINING INC
805902			55	(B-28-20) 25 ACC		195,442.90	3,965,325.10	12/31/1955	600	600	8				450.00		S		10	-	ARIZONA ACREAGE LLC
547883			55	(B-28-20) 28		190,507.90	3,965,381.60	3/31/1995	-	-	0				-		None ME	X	-	-	US BORAX INC
547884			55	(B-28-20) 29		188,903.80	3,965,435.90		-	-	0				-		None ME		-	-	US BORAX INC
547885			55	(B-28-20) 30		187,305.00	3,965,495.70	3/16/1995	-	-	0				-		None ME A	X	-	-	US BORAX INC

ERROL L. MONTGOMERY & ASSOCIATES, INC.

TABLE 1. WELL INVENTORY FOR DETRITAL VALLEY
MOHAVE COUNTY, ARIZONA

ADWR 55-WELL REGISTRY NUMBER	ADWR 35-WELL REGISTRY NUMBER	GWSI SITE ID	RECORD SOURCE	WELL IDENTIFIER	WELL NAME/ INDEX WELL	UTM COORDINATES (NAD 27) Easting (meters)	UTM COORDINATES (NAD 27) Northing (meters)	DATE COMPLETED	WELL DEPTH (feet, bls)	CASING DEPTH (feet, bls)	CASING DIAMETER (inches)	CASING PERFORATED INTERVAL (feet, bls)	LAND SURFACE ALTITUDE (feet, msl)	WATER LEVEL DATE	WATER LEVEL DEPTH (feet, bls)	WATER LEVEL ALTITUDE (feet, msl)	WELL / WATER USE	LOG	REPORTED PUMPING RATE (gpm)	REPORTED TESTING RATE (gpm)	OWNER
547886			55	(B-28-20) 33		190,447.90	3,963,781.70	3/2/1995	-	-	0				-		None ME A	X	-	-	US BORAX INC
	13956		35	(B-28-21) 03 ABB		182,822.20	3,972,804.60	9/8/1965	1,300	1,300	10				80.00		Pr ME	X	22		GOLDFIELD CORP,
	13957		35	(B-28-21) 03 ABC		182,815.90	3,972,605.60	9/8/1965	750		10				-		A O	X	-		GOLDFIELD CORP,
505400		354636114323201	55	(B-28-21) 20 AAB		179,834.50	3,968,072.80	9/25/1980	385	385	6				307.00		S	X	25	25	BLM-PHOENIX DISTRICT
505400		354836114323201	GWSI	(B-28-21) 20 ADB	Index	179,889.20	3,967,852.11	9/25/1980	385	385	6	345-385	2,330	10/21/2003	304.40	2,025.60	U	X			BLM
801524			55	(B-28-21) 20 AD		179,919.60	3,967,564.70	9/25/1980	385	184	6				-		S		-	-	BLM-PHOENIX DISTRICT
805896			55	(B-28-21) 20 DAC		179,804.60	3,967,063.30	12/31/1978	350	350	8				240.00		S		5	-	ARIZONA ACREAGE LLC
531378		354736114301301	55	(B-28-21) 23 CCC		183,419.40	3,966,552.70	5/21/1991	503	503	6				180.00		M	X	60	55	HINTZE, WILLIAM, E
531378		354736114301301	GWSI	(B-28-21) 23 CCC		183,335.71	3,966,493.34		503	503			2,180	11/8/1995	194.80	1,985.20	I				WILLIAM HINTZE
535632			55	(B-28-21) 23 CCC		183,419.40	3,966,552.70	6/9/1992	365	365	8				210.00		M	X	90	90	HINTZE, WILLIAM, E
533561			55	(B-28-21) 26 BAB		183,808.50	3,966,344.00	1/15/1992	485	480	6				255.00		M	X	-	-	WALKUP, CHESTER, E
		354733114301201	GWSI	(B-28-21) 26 BBB		183,357.52	3,966,399.96		-	-			2,180	11/8/1995	194.80	1,985.20	I				CANYON SAND AND GRAVEL
501132		354728114300501	55	(B-28-21) 26 BBD		183,602.80	3,966,144.00	11/1/1981	400	400	10				195.00		O M	X	40	40	BUREAU OF LAND MANAGEMENT
501132		354728114300501	GWSI	(B-28-21) 26 BBD		183,527.62	3,966,239.54		400	400			2,190	11/8/1995	198.80	1,991.40	U				BLM
637017			55	(B-29-19) 29 BB		197,493.20	3,975,427.40	1/1/1950	1,000	1,000	6				900.00		S		15	15	ARIZONA ACREAGE LLC
523710			55	(B-29-21) 19		177,235.70	3,977,142.10		-	-	0				-		None ME		-	-	GEXA GOLD CORP
526704			55	(B-29-21) 19		177,235.70	3,977,142.10	1/22/1990	525	-	5				-		None ME A	X	-	-	WHARF RESOURCES INC
546600			55	(B-29-21) 27 CCD		181,489.50	3,974,677.20		-	-	0				-		M		-	-	AZ STATE LAND DEPT
546599			55	(B-29-21) 27 DDC		182,493.10	3,974,644.60		-	-	0				-		M		-	-	AZ STATE LAND DEPT
545711		355155114315101	55	(B-29-21) 28 DDD		181,085.60	3,974,691.60	8/19/1994	400	400	7				73.00		M O	X	85	25	A & K EARTH MOVERS INC
545711		355155114315101	GWSI	(B-29-21) 28 DDD		181,162.70	3,974,565.89		400	400			2,005	11/8/1995	71.80	1,933.20	U				BITTERROOT RESOURCES
637019			55	(B-29-21) 35 CC		182,941.30	3,973,104.40	2/5/1958	100	100	8				40.00		S		20	20	ARIZONA ACREAGE LLC
		355110114304101	GWSI	(B-29-21) 35 CCB		182,869.38	3,973,115.38		-	-			1,980	10/27/1992	0.73	1,979.27	U				
629128		360105114281101	55	(B-30-20) 06 BDD		187,286.30	3,991,400.00	1/1/1957	-	-	0				-				-	-	NATL PARK SERVICE
629128		360105114281101	GWSI	(B-30-20) 06 CAD UNSURV	Index	187,273.44	3,990,952.56		185	185			1,339	10/21/2003	57.50	1,281.50	U				NPS
	13981		35	(B-30-20) 18 BDD		187,178.20	3,988,177.80	1/1/1957	-	-					-		Pr P		-		
		360226114195801	GWSI	(B-31-19) 28 CCD		199,718.87	3,993,387.81		-	-			348		-	-	U				NPS
629085		360205114201201	55	(B-31-19) 32 ADA		199,383.50	3,992,807.10	6/1/1967	200	-	12				89.00		P		35	35	NATL PARK SERVICE
629085		360205114201201	GWSI	(B-31-19) 33 BBC UNSURV		199,628.97	3,992,958.83		200	200			1,263	11/9/1995	44.60	1,218.40	P				
[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]					[illegible]						NATL PARK SERVICE
[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]					[illegible]						NPS
629134		360206114192401	55	(B-31-19) 33 ACA		200,582.30	3,992,767.30	1/1/1952	200	-	8				125.00				-	-	NATL PARK SERVICE
629134		360206114192401	GWSI	(B-31-19) 33 ACA UNSURV		200,442.57	3,992,560.65		200	-			1,280	11/9/1995	-	-	U				NPS
[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]					[illegible]						NATL PARK SERVICE
[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]					[illegible]						NPS
629135		360202114192901	55	(B-31-19) 33 ACC		200,377.70	3,992,571.80	9/25/1957	163	-	12				112.00				-	-	NATL PARK SERVICE
629135		360202114192901	GWSI	(B-31-19) 33 ACC1		200,419.64	3,992,623.15		163	163			1,270	9/1/1957	112.00	1,158.00	P				NPS
		360156114193101	GWSI	(B-31-19) 33 ACC UNSURV		200,363.24	3,992,439.92		-	-			1,312	11/9/1995	91.50	1,220.50	U				NPS

NOTES: This inventory excludes wells located in bedrock areas identified in Arizona Department of Water Resources (ADWR) Hydrologic Map Series Report Number 14, June 1987.
* Denotes information obtained from Notice of Intent filed with ADWR
Adjacent well data entries that are shaded same color are duplicates from different sources or additional rows of information from the same source.

ABBREVIATIONS:
55 = current ADWR registry of wells
35 = pre-1980 well registry system created by the Arizona State Land Department
ADWR = Arizona Department of Water Resources
BLM = U.S. Bureau of Lad Management
feet, bls = feet below land surface
feet, msl = feet below mean sea level
gpm = gallons per minute
M&A = Errol L. Montgomery & Associates, Inc.
GWSI = Groundwater Site Inventory (maintained by ADWR)
NAD 27 = North American Datum, 1927; wells plotted in Zone 12N
NPS = National Park Service
UTM = Universal Transverse Mercator map projection

WELL/WATER USE
A = Abandoned
B = Utility
C = Commercial
H = Domestic
I = Irrigation
M = Monitoring
ME = Mineral Exploration
N = Industrial
None = No water use
O = Other
P = Public Supply/Municipal
Pr = Production
R = Recreational
S = Stock
T = Test
U = Unused

ERROL L. MONTGOMERY & ASSOCIATES, INC.

TABLE 2. RESULTS OF LABORATORY CHEMICAL ANALYSES FOR GROUNDWATER SAMPLES OBTAINED FROM WELLS IN AREA OF THE VILLAGES AT WHITE HILLS MOHAVE COUNTY, ARIZONA

Well Name:		Rosie's	WH-1 U	WH-1 L	WH-1 L	WH-1 L	WH-1 L	WH-1 L	WH-1 L	WH-1 L	WH-1 L	WH-2 L	WH-2 L	WH-2 L	WH-2 L	WH-2 L
ADWR Well Number:		55-803813	55-901788	55-910788	55-910788	55-910788	55-910788	55-910788	55-910788	55-910788	55-910788	55-901780	55-901780	55-901780	55-901780	55-901780
Cadastral Location:		(B-27-21)	(B-27-21)	(B-27-21)	(B-27-21)	(B-27-21)	(B-27-21)	(B-27-21)	(B-27-21)	(B-27-21)	(B-27-21)	(B-27-20)	(B-27-20)	(B-27-20)	(B-27-20)	(B-27-20)
		25 BAA	25 ADC	25 ADC	25 ADC	25 ADC	25 ADC	25 ADC	25 ADC	25 ADC	25 ADC	16 DAA	16 DAA	16 DAA	16 DAA	16 DAA
Lab Work Order:		0503084-01	0504263-01	0503084-03	0503084-04	0503188-01	0503188-02	0503188-03	0503272-01	0503272-02	0503302-01	0503406-01	0503406-02	0504058-02	0504058-01	0504169-01
Depth Sampled (feet):		420 - 485	460 - 530	465	505	1,385	1,425 - 1,445	1,425 - 1,545	1,425 - 1,905	1,425 - 2,005	1,425 - 2,005	960	1,020	1,019 - 1,060	1,019 - 1,370	1,019 - 1,419
Date Sampled:		3/4/2005	4/14/2005	3/6/2005	3/6/2005	3/13/2005	3/13/2005	3/13/2005	3/15/2005	3/15/2005	3/21/2005	3/24/2005	3/24/2005	3/31/2005	4/1/2005	4/8/2005
	UNITS															
FIELD PARAMETERS:																
Temperature	deg C	25.2	27.2	25.8	25.1	29.1	38.2	40.3	41.0	42.2	43.8	—	—	35.7	40.2	42.5
pH	std units	6.89	8.13	7.59	7.80	7.68	7.71	7.81	7.68	7.85	8.70	—	—	8.38	8.01	8.10
Electrical Conductivity (EC)	uS/cm	448	470	431	450	2,091	1,386	1,195	1,315	1,117	1,717	—	—	632	573	620
LAB RESULTS:																
Antimony (Sb)	mg/L	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0010	< 0.0010	< 0.0010	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030
Arsenic (As)	mg/L	0.012	0.012	< 0.0040	< 0.0040	0.0010	< 0.0010	< 0.0010	< 0.0040	0.0058	0.038/0.041*	< 0.0040	< 0.0040	0.020	0.013	0.029
Barium (Ba)	mg/L	0.081	0.077	0.028	0.036	< 0.010	< 0.010	0.15	0.089	0.074	0.160	< 0.010	0.010	0.022	0.028	0.019
Beryllium (Be)	mg/L	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Cadmium (Cd)	mg/L	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030
Chromium (Cr)	mg/L	0.033	0.030	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.032	< 0.010	< 0.010	0.018	< 0.010	0.020
Copper (Cu)	mg/L	0.011	< 0.010	< 0.010	0.012	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Iron (Fe)	mg/L	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.56	< 0.10	< 0.10	< 0.10	< 0.10	0.18
Lead (Pb)	mg/L	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0010	< 0.0010	< 0.0010	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030
Manganese (Mn)	mg/L	< 0.010	< 0.010	0.088	0.10	< 0.010	0.13	0.10	0.087	0.054	0.021	0.20	0.074	< 0.010	0.022	< 0.010
Mercury (Hg)	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Nickel (Ni)	mg/L	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Selenium (Se)	mg/L	< 0.0030	< 0.0030	< 0.0030	< 0.0030	0.0051	0.0033	0.0041	< 0.0030	< 0.0030	< 0.0030	0.0051	0.0028	< 0.0030	< 0.0030	< 0.0030
Thallium (Tl)	mg/L	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0010	< 0.0010	< 0.0010	< 0.0020	< 0.0020	< 0.0020	< 0.0010	< 0.0010	< 0.0020	< 0.0020	< 0.0020
Calcium (Ca)	mg/L	24	19	15	18	30	17	15	18	12	13	70	30	37	22	21
Magnesium (Mg)	mg/L	10	8.9	8.2	8.7	2.5	1.3	< 1.0	< 1.0	< 1.0	3.3	9.0	12	18	19	18
Potassium (K)	mg/L	4.1	4.9	5.0	5.3	6.7	4.1	3.6	4.1	3.0	4.0	6.8	5.6	5.1	5.7	5.4
Sodium (Na)	mg/L	51	65	60	59	410	230	200	210	180	270	170	98	75	79	77
Cyanide (NH4)	mg/L	—	< 0.010	—	—	—	—	—	—	—	< 0.010	—	—	—	—	< 0.010
Silica (SiO2)	mg/L	27	29	13	15	< 0.43	3.7	15	18	21	22	2.2	19	25	25	25
Chloride (Cl)	mg/L	36	38	34	34	94	120	200	240	190	210	23	23	23	23	22
Fluoride (F)	mg/L	1.1	1.1	1.1	1.1	0.98	0.59	0.88	0.78	1.1	0.94	1.8	2.3	2.6	2.5	2.5
Sulfate (as SO4)	mg/L	42	43	35	42	730	310	130	150	130	340	510	160	130	96	85
Nitrate (NO3 - as N)	mg/L	4.8	3.6	3.9	3.6	2.2	4.4	4.1	4.7	3.4	3.7	4.4	4.7	4.3	4.2	4.7
Nitrite (NO2 - as N)	mg/L	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Bicarbonate (HCO3 as CaCO:	mg/L	120	130	110	110	43	56	63	64	88	73	33	120	120	130	160
Carbonate (CO3 as CaCO3)	mg/L	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	30	26	< 20
Hydroxide (OH as CaCO3)	mg/L	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Total Alkalinity (Alk as CaCO3	mg/L	120	130	110	110	43	56	63	64	88	73	33	120	150	150	160
pH	std units	—	8.0	—	—	—	—	—	—	—	8.5	—	—	—	—	8.1
Temperature	deg C	—	26.2	—	—	—	—	—	—	—	21.3	—	—	—	—	21.4
Hardness, Calcium (Hard)	mg/L	61	48	37	45	84	47	41	44	30	32	180	76	91	56	53
Specific Conductance (EC)	uS/cm	450	460	450	460	2,100	1,400	1,200	1,300	1,100	1,600	1,200	680	680	610	600
Total Dissolved Solids (TDS)	mg/L	280	280	280	260	1,500	840	680	740	640	970	790	450	430	410	370
Gross Alpha Activity (Alpha)	pCi/L	4.8 ± 1.0	4.7 ± 1.0	2.3 ± 0.7	3.6 ± 0.9	1.2 ± 0.5	< 0.5	1.1 ± 0.5	1.9 ± 0.7	1.3 ± 0.6	1.8 ± 0.6	6.0 ± 2.8	7.3 ± 2.8	10.3 ± 1.6	14.0 ± 2.0	8.3 ± 1.4
Langlier Index		—	—	—	—	—	—	—	—	—	-0.15	—	—	—	—	0.011

Abbreviations:
deg C = degrees Celsius
mg/L = milligrams per liter
uS/cm = microSiemens per centimeter
pCi/L = picoCuries per liter
std units = standard units
mV = millivolts

Notes: * Dissolved Arsenic/Total Arsenic

ERROL L. MONTGOMERY & ASSOCIATES, INC.

ERROL L. MONTGOMERY & ASSOCIATES, INC.

ILLUSTRATIONS

ILLUSTRATIONS

Figure

1 LOCATION MAP FOR DETRITAL VALLEY

2 WATER LEVEL DRAWDOWN GRAPH FOR PUMPED WELL WH-1L

3 WATER LEVEL RECOVERY GRAPH FOR PUMPED WELL WH-1L

4 WATER LEVEL DRAWDOWN GRAPH FOR PUMPED WELL WH-2L

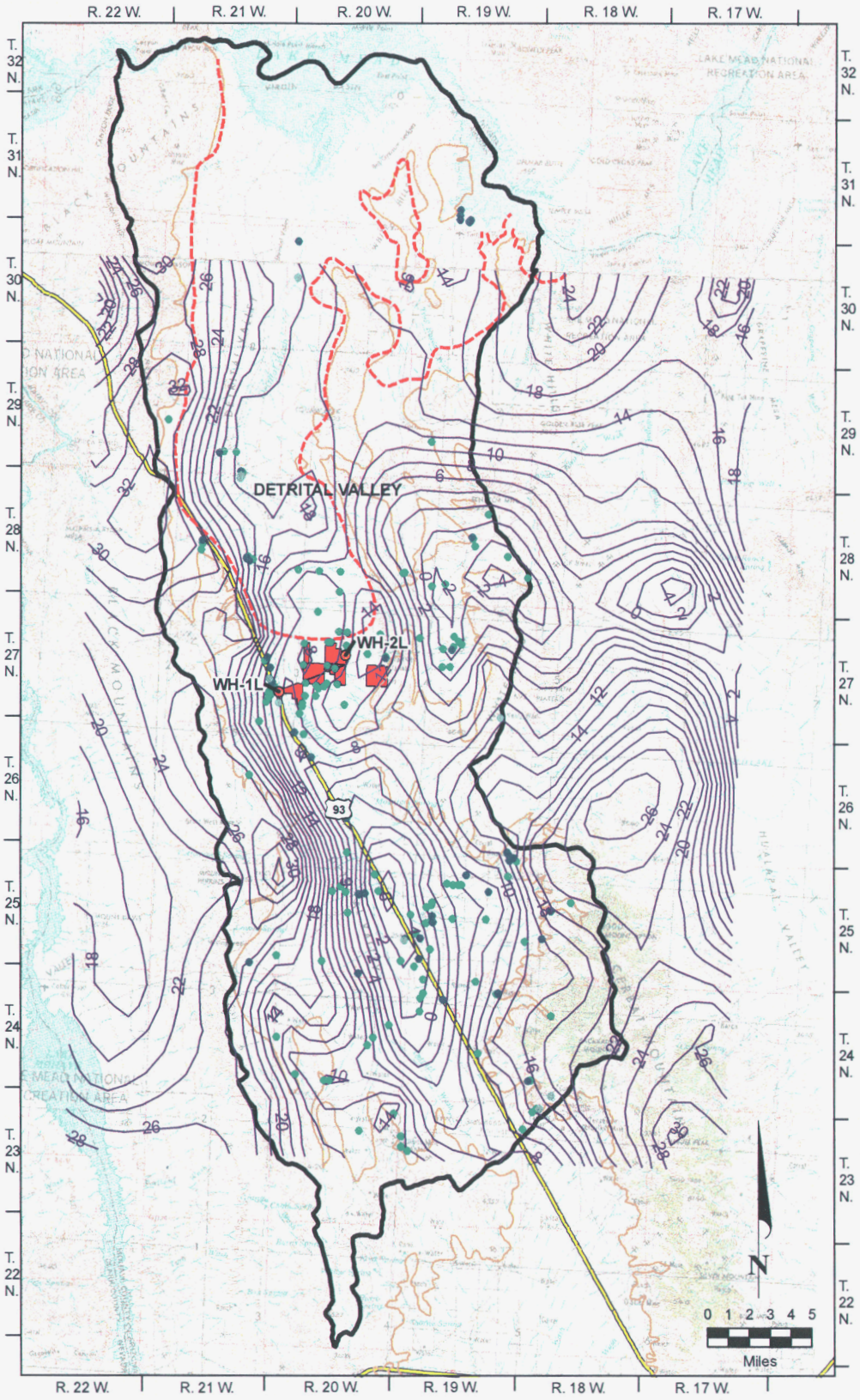
5 WATER LEVEL RECOVERY GRAPH FOR PUMPED WELL WH-2L

6 PROJECTED GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY, AVERAGE ANNUAL TOTAL PUMPING RATE OF 16,320 ACRE-FEET PER YEAR WITH TWO AQUIFER BOUNDARIES

7 PROJECTED GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY, AVERAGE ANNUAL TOTAL PUMPING RATE OF 22,260 ACRE-FEET PER YEAR WITH ONE AQUIFER BOUNDARY

8 HYDROGRAPH OF GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING 16,320 ACRE-FEET PER YEAR WITH TWO AQUIFER BOUNDARIES AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY

9 HYDROGRAPH OF GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING 22,260 ACRE-FEET PER YEAR WITH ONE AQUIFER BOUNDARY AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY



EXPLANATION

Wells

Note: Wells in bedrock areas are not included

- New Well
- 35- Series
- GWSI
- 55- Series

- The Villages at White Hills
- U.S. Bureau of Reclamation Colorado River Accounting Surface (U.S. Geological Survey WRIR 94-4005)
- Bedrock Boundary (ADWR Hydrologic Map Series, Report No. 14, 1987)
- Detrital Basin Boundary (ADWR Hydrologic Map Series, Report No. 14, 1987)
- 20 Residual Bouguer Gravity Anomaly Contour (in milligals) (hydroGEOPHYSICS, Inc., 2005)

FIGURE 1. LOCATION MAP FOR DETRITAL VALLEY

ERROL L. MONTGOMERY & ASSOCIATES, INC.

GISDATA\Projects\440\440.52\DetritalBasin_Figure1.mxd UTM NAD 27 03May2005

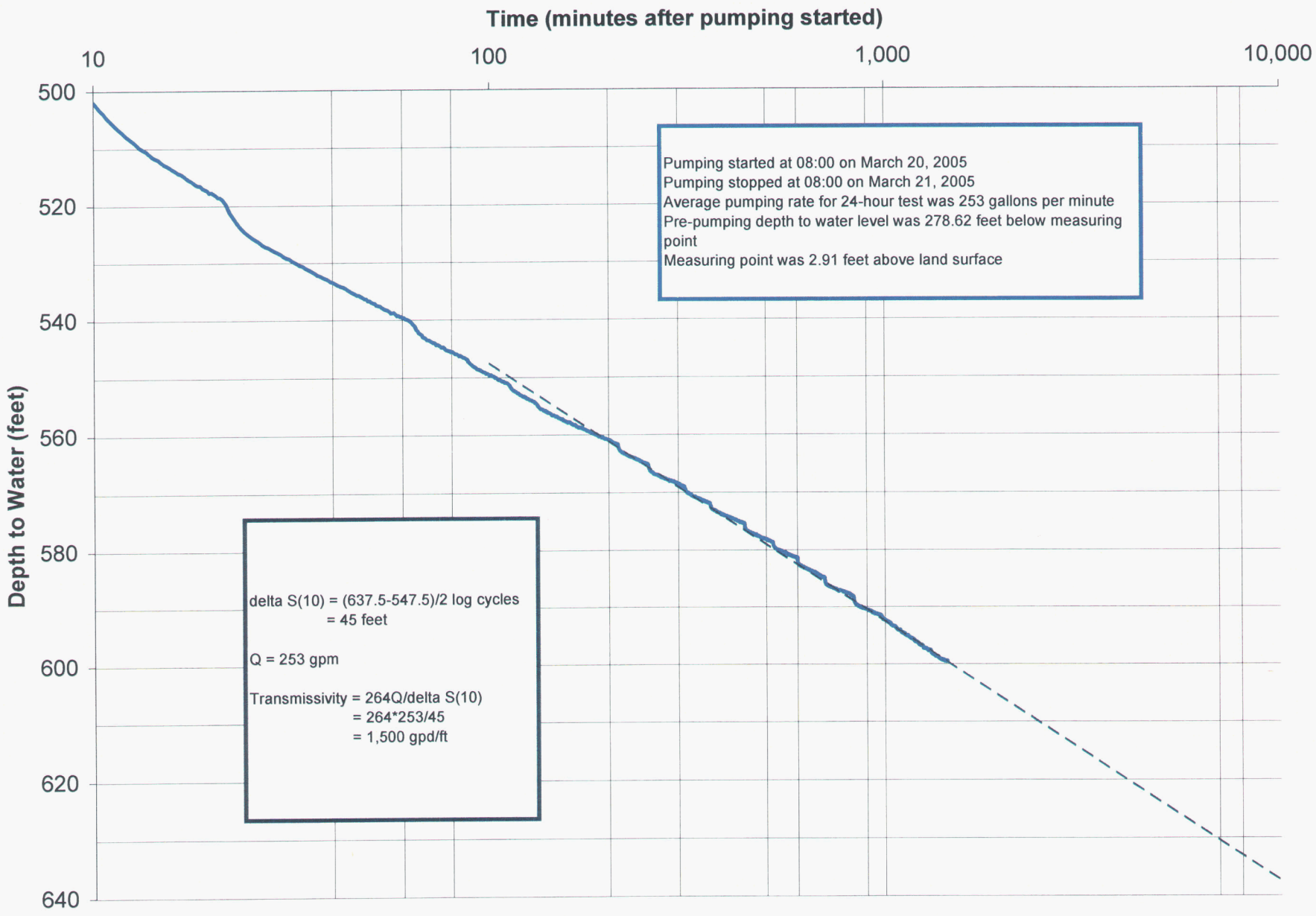


FIGURE 2. WATER LEVEL DRAWDOWN GRAPH FOR PUMPED WELL WH-1L

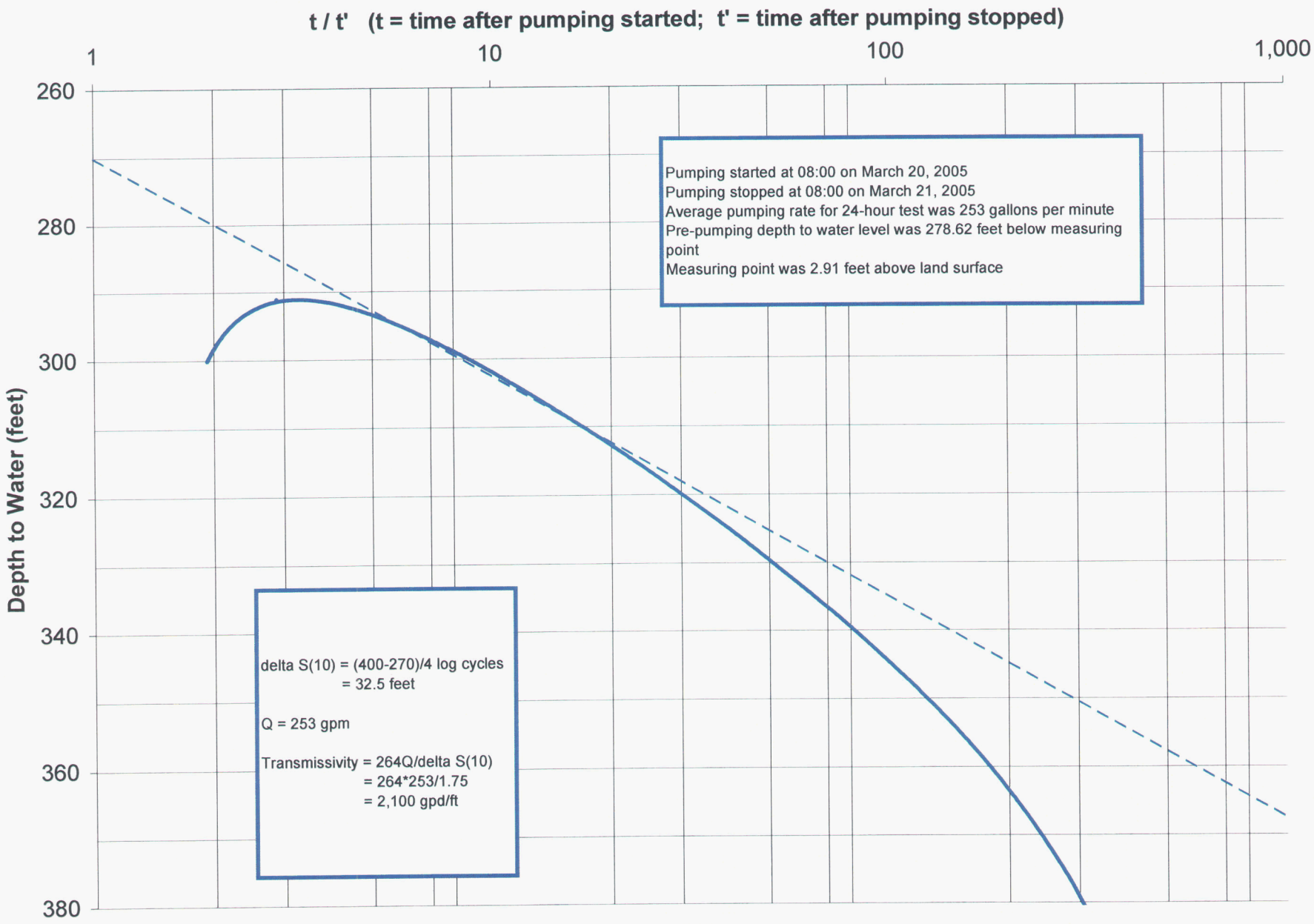


FIGURE 3. WATER LEVEL RECOVERY GRAPH FOR PUMPED WELL WH-1L

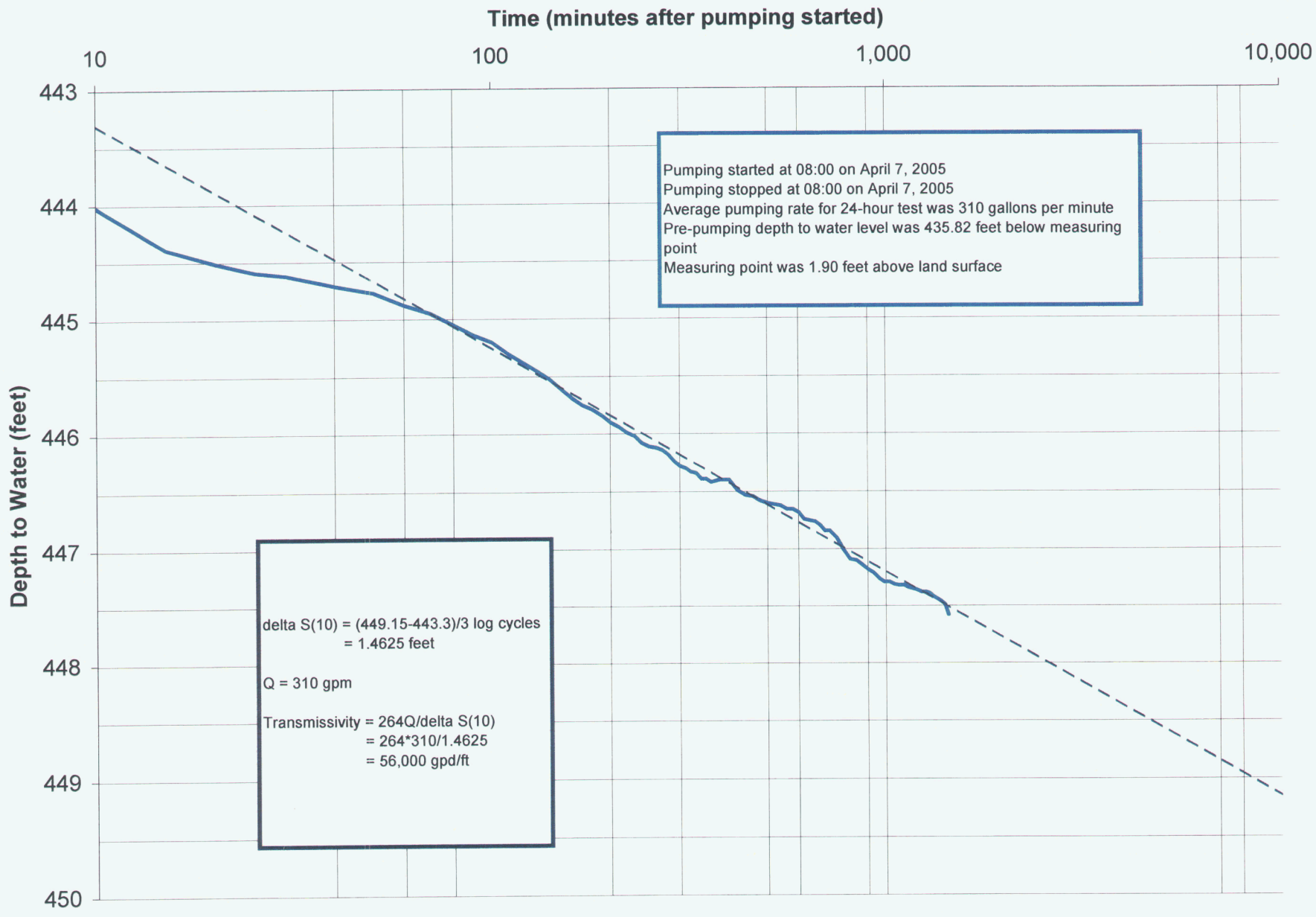


FIGURE 4. WATER LEVEL DRAWDOWN GRAPH FOR PUMPED WELL WH-2L

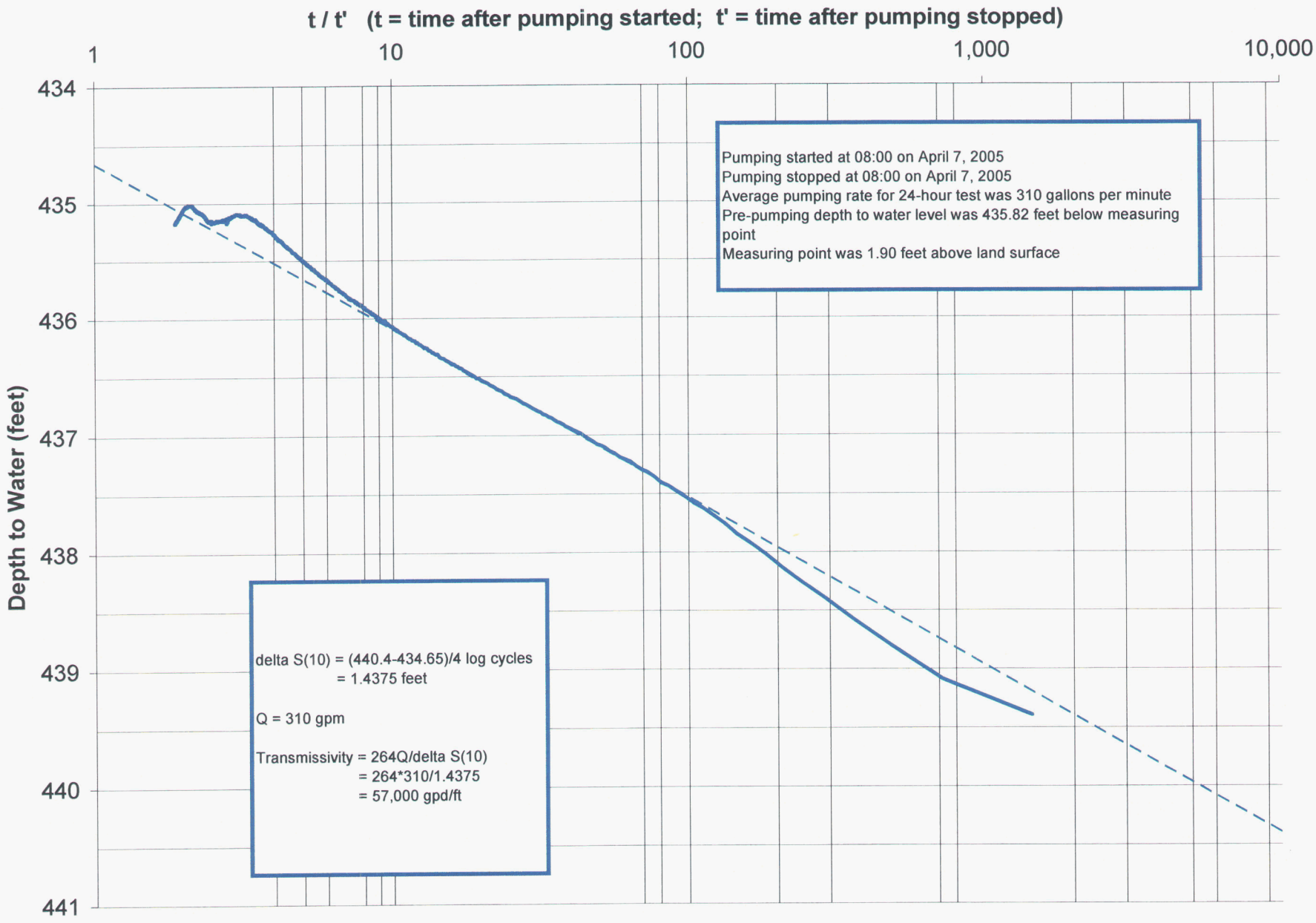


FIGURE 5. WATER LEVEL RECOVERY GRAPH FOR PUMPED WELL WH-2L

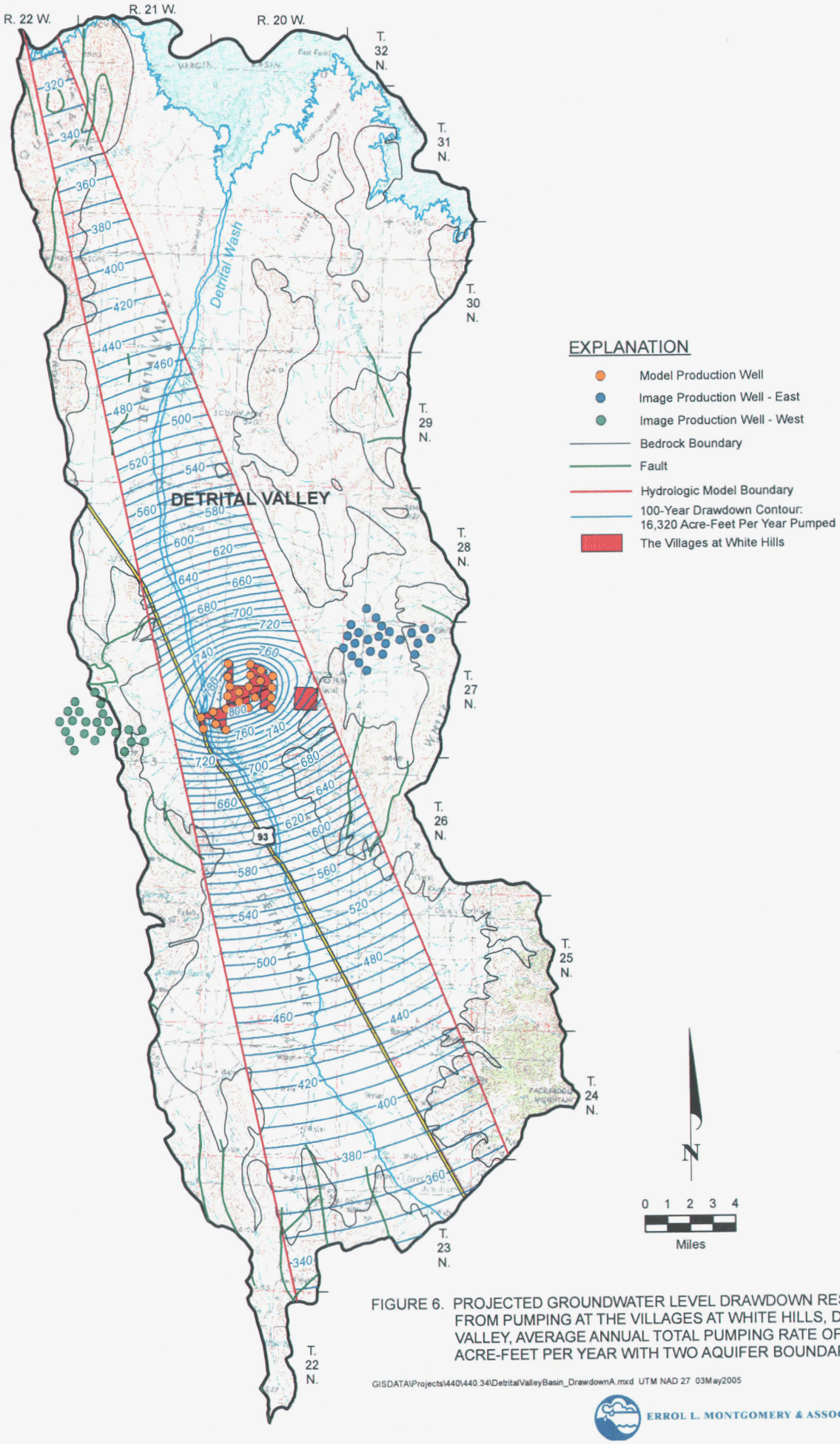


FIGURE 6. PROJECTED GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY, AVERAGE ANNUAL TOTAL PUMPING RATE OF 16,320 ACRE-FEET PER YEAR WITH TWO AQUIFER BOUNDARIES

GISDATA\Projects\440\440.34\DetritalValleyBasin_DrawdownA.mxd UTM NAD 27 03May2005

ERROL L. MONTGOMERY & ASSOCIATES, INC.

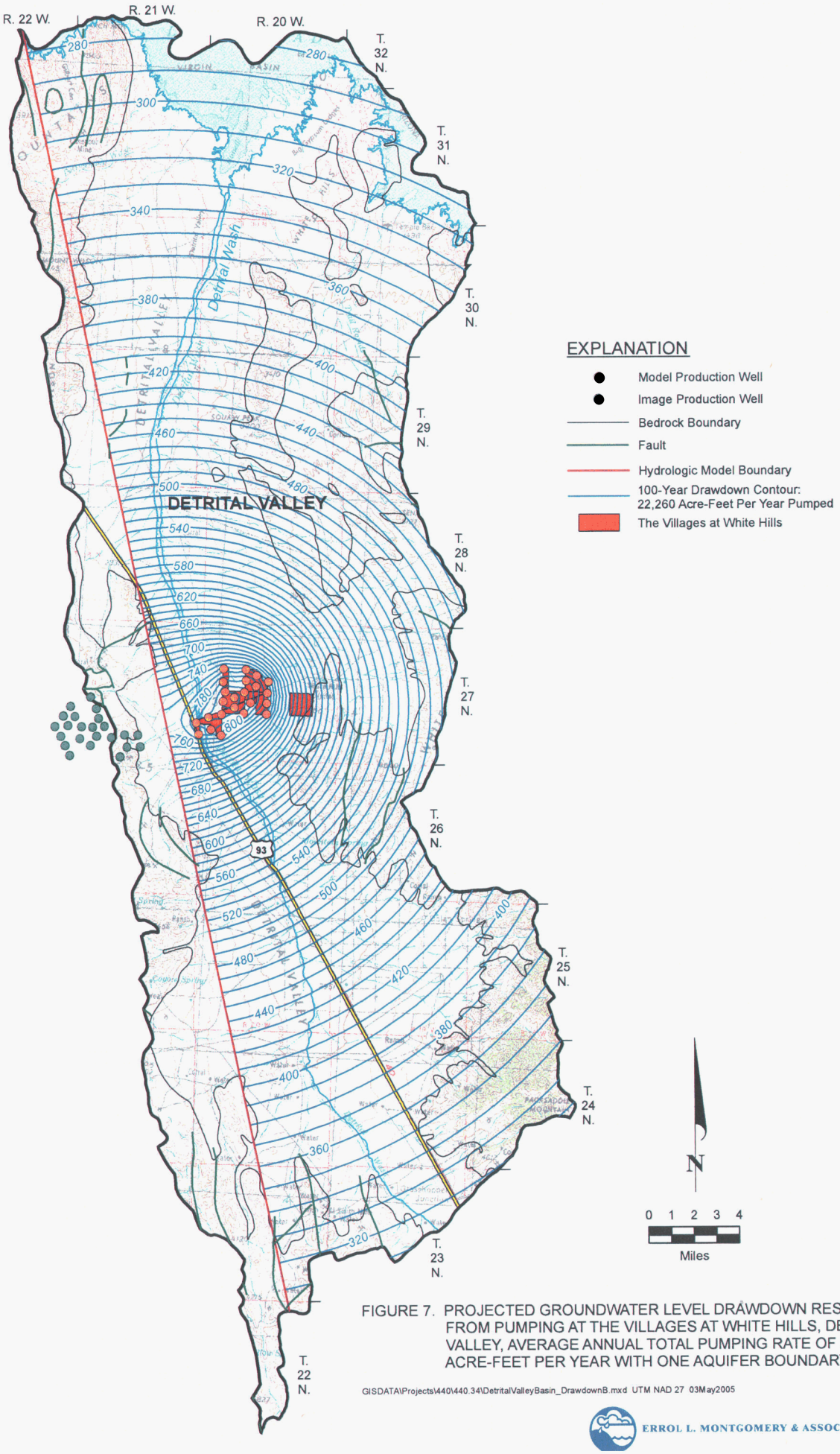


FIGURE 7. PROJECTED GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY, AVERAGE ANNUAL TOTAL PUMPING RATE OF 22,260 ACRE-FEET PER YEAR WITH ONE AQUIFER BOUNDARY

GISDATA\Projects\440\440.34\DetritalValleyBasin_DrawdownB.mxd UTM NAD 27 03May2005

ERROL L. MONTGOMERY & ASSOCIATES, INC.

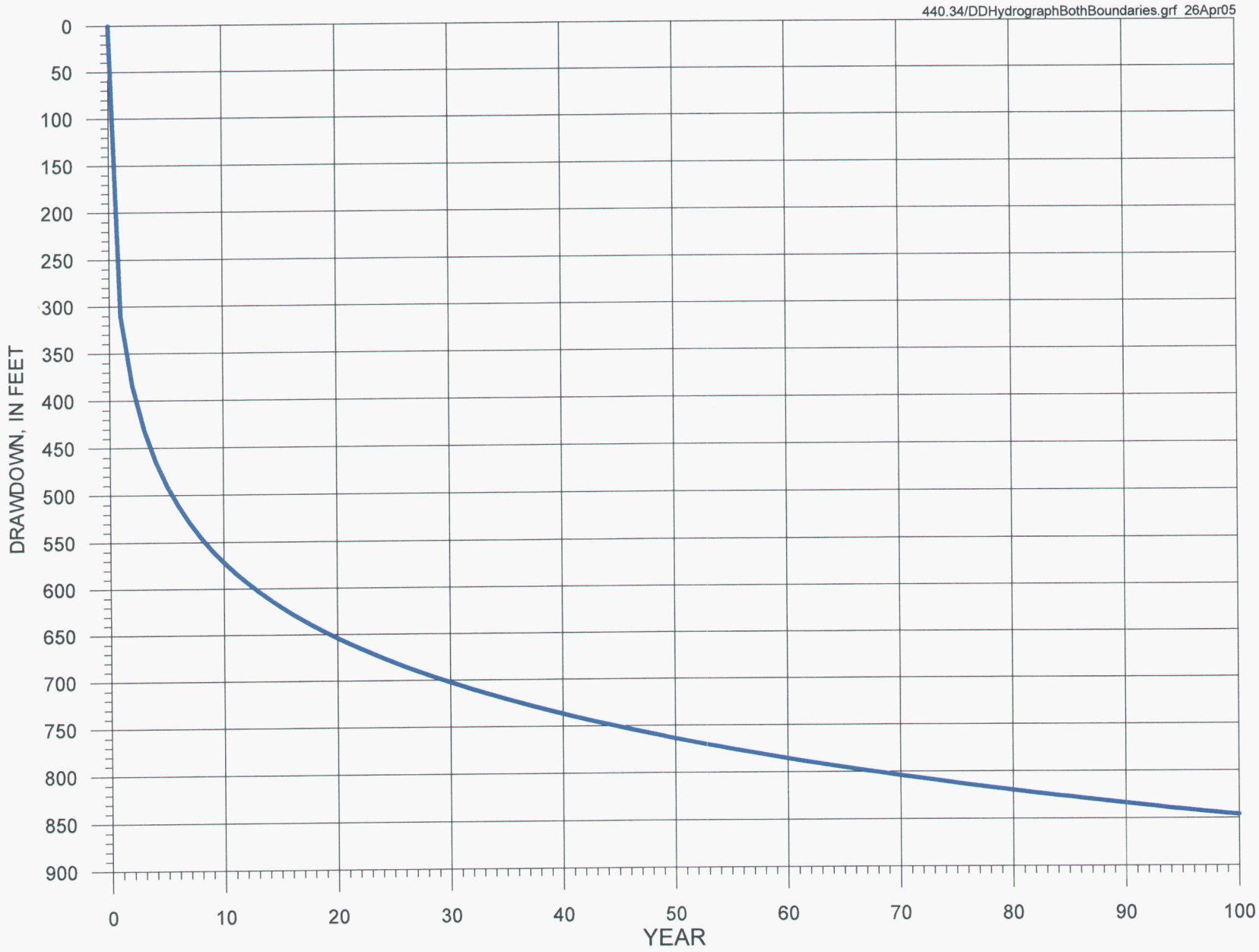


FIGURE 8. HYDROGRAPH OF GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING 16,320 ACRE-FEET PER YEAR WITH TWO AQUIFER BOUNDARIES AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY

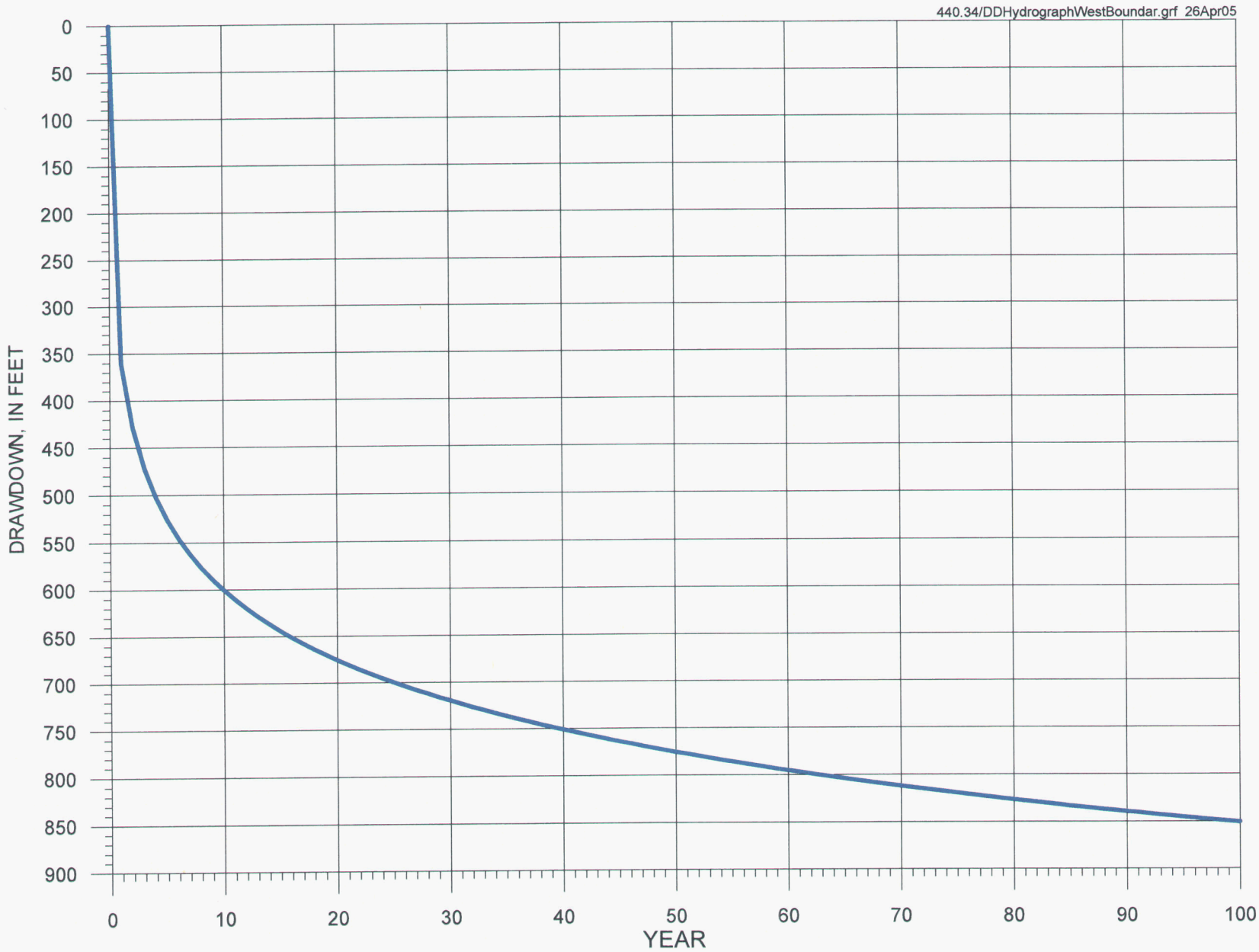


FIGURE 9. HYDROGRAPH OF GROUNDWATER LEVEL DRAWDOWN RESULTING FROM PUMPING 22,260 ACRE-FEET PER YEAR WITH ONE AQUIFER BOUNDARY AT THE VILLAGES AT WHITE HILLS, DETRITAL VALLEY

ERROL L. MONTGOMERY & ASSOCIATES, INC.

APPENDIX A

WELL NUMBERING SYSTEM

APPENDIX A

WELL NUMBERING SYSTEM

The well numbers used in this report are in accordance with the Bureau of Land Management's system of land subdivision. The land survey in Arizona is based on the Gila and Salt River meridian and base line, which divide the state into four quadrants. These quadrants are designated, counter-clockwise, by the capital letters A, B, C, and D. All land north and east of the point of origin is in quadrant A; all land north and west of the origin is in quadrant B; all land south and west of the origin is in quadrant C; and all land south and east of the origin is in quadrant D. The first digit of a well number indicates the township, the second digit the range, and the third digit the section in which the well is located. The lowercase letters a, b, c, and d after the section number indicate the well location within the section. The first letter denotes a particular 160-acre tract or quarter section; the second letter denotes the 40-acre tract or quarter-quarter section; and the third letter denotes the 10-acre tract or quarter-quarter-quarter section. These letters are also assigned in a counter-clockwise direction, beginning in the northeast quarter. As shown on **Figure A-1**, well number (B-05-03)15aaa designates the well as being located in the Northeast ¼, Northeast ¼, Northeast ¼ of Section 15, Township 5 North, Range 3 West. Where more than one well is located within a 10-acre tract, consecutive numbers beginning with "1" may be added as suffixes.

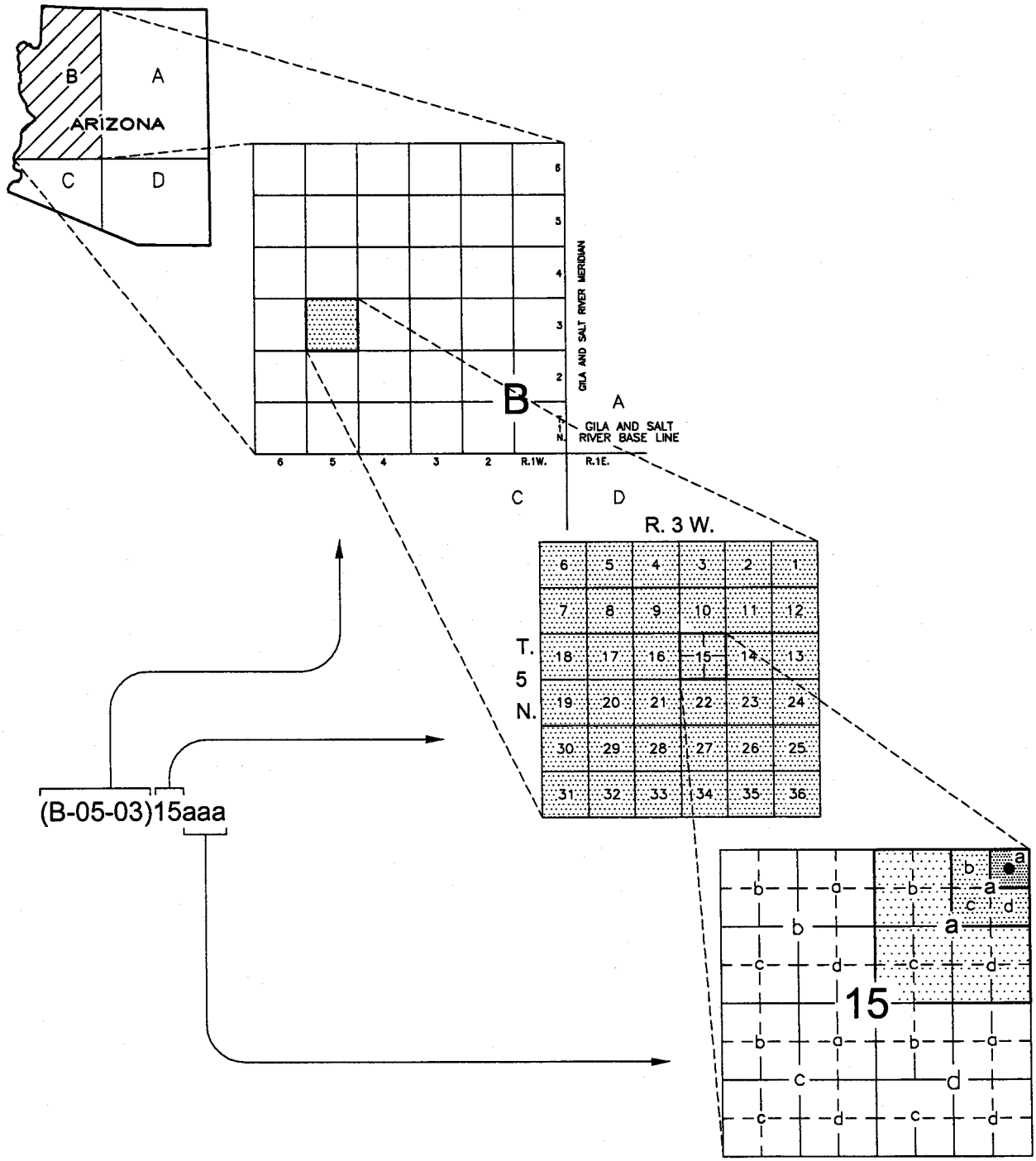


FIGURE A-1. WELL NUMBERING DIAGRAM

440\well numbering diagram\18Mar2005

ERROL L. MONTGOMERY & ASSOCIATES, INC.

APPENDIX B

SUMMARY LITHOLOGIC LOGS FOR WELLS WH-1L AND WH-2L

ERROL L. MONTGOMERY & ASSOCIATES, INC.

SUMMARY LITHOLOGIC LOG FOR WELL WH-1L
RHODES HOMES - ARIZONA LLC

Cadastral location: B(27-21) 25 ADC
ADWR Registration Number: 55-901788
Latitude: 35 deg, 41 min, 57.96 sec
Longitude: 114 deg, 28 min, 18.72 sec

Depth Interval (in feet bls)	Lithologic Description
0 - 40	**Younger Alluvium:** Fine to coarse sand with some gravel and clay; abundant volcanic fragments
40 - 190	**Older Alluvium:** Silty sand with some thin gravel interbeds
190 - 315	Silty sandy gravel
315 - 505	Sandy gravel
505 - 515	Sandy gravel and clay
515 - 585	**Mudstone of Muddy Creek Formation:** Silty clay, clay, and claystone, with some gypsum
585 - 785	Silty clay w/ abundant gypsum
785 - 865	Silty clay w/ some gypsum
865 - 945	Dense uniform brown clay with very little silt
945 - 1,015	Dense uniform brown clay, with some silty claystone and very little silt
1,015 - 1,075	Silty claystone w/ some gypsum and mudstone
1,075 - 1,145	Silty claystone w/ some gypsum
1,145 - 1,295	Gypsum, often massive and crystalline, with some silt and clay (massive hard gypsum 1,255 to 1,275 feet)
1,295 - 1,350	Soft clay with some gypsum
1,350 - 1,355	Thin bed of gravel
1,355 - 1,365	Soft brown silty clay with gypsum
1,365 - 1,385	**Conglomerate of Muddy Creek Formation:** Silty, sandy conglomerate: well lithified
1,385 - 1,395	Silty, clayey sandstone and conglomerate; well lithified
1,395 - 1,405	Silty, sandy claystone, some gravel and conglomerate; well lithified
1,405 - 1,765	Conglomerate, (quartz, gneiss, schist, granitic rocks); very well lithified
1,765 - 2,006	Conglomerate, similar to above but with abundant volcanic fragments (reddish brown rhyolite)

Total Depth Drilled = 2,006 feet bls

ERROL L. MONTGOMERY & ASSOCIATES, INC.

SUMMARY LITHOLOGIC LOG FOR WELL WH-2L
RHODES HOMES - ARIZONA LLC

Cadastral location: B(27-20) 16 DAA
ADWR Registration Number: 55-901780
Latitude: 35 deg, 43 min, 38.28 sec
Longitude: 114 deg, 24 min, 56.40 sec

Depth Interval (in feet bls)	Lithologic Description
0 - 50	**Younger Alluvium:** Fine to very coarse sand and gravel with some silt and clay
50 - 500	**Older Alluvium:** Sandy gravel with trace of silt and clay
500 - 510	Silty clayey gravel with some sand
510 - 590	**Mudstone of Muddy Creek Formation:** Red-brown to green cohesive clay, with some dense clay
590 - 670	Brown to gray clay with beds of gypsum
670 - 740	Red to brown clay with some gypsum
740 - 810	Dense red clay with some sand and white clay; trace of gypsum
810 - 880	Red clay with abundant bedded gypsum
880 - 940	Red clay with gravel and sand, some dense hard clay chips
940 - 1,140	**Conglomerate of Muddy Creek Formation:** Red conglomerate; moderately lithified
1,140 - 1,180	**Bedrock:** Gneiss and schist; highly fractured with hematite coatings
1,180 - 1,250	Granite gneiss; highly fractured with hematite coatings
1,250 - 1,360	Gneiss and schist; highly fractured
1,360 - 1,420	Schist with gneiss; highly fractured, less hematite

Total Depth Drilled = 1,420 feet bls

ERROL L. MONTGOMERY & ASSOCIATES, INC.

APPENDIX C

HYDROGEOPHYSICS, INC. REPORT

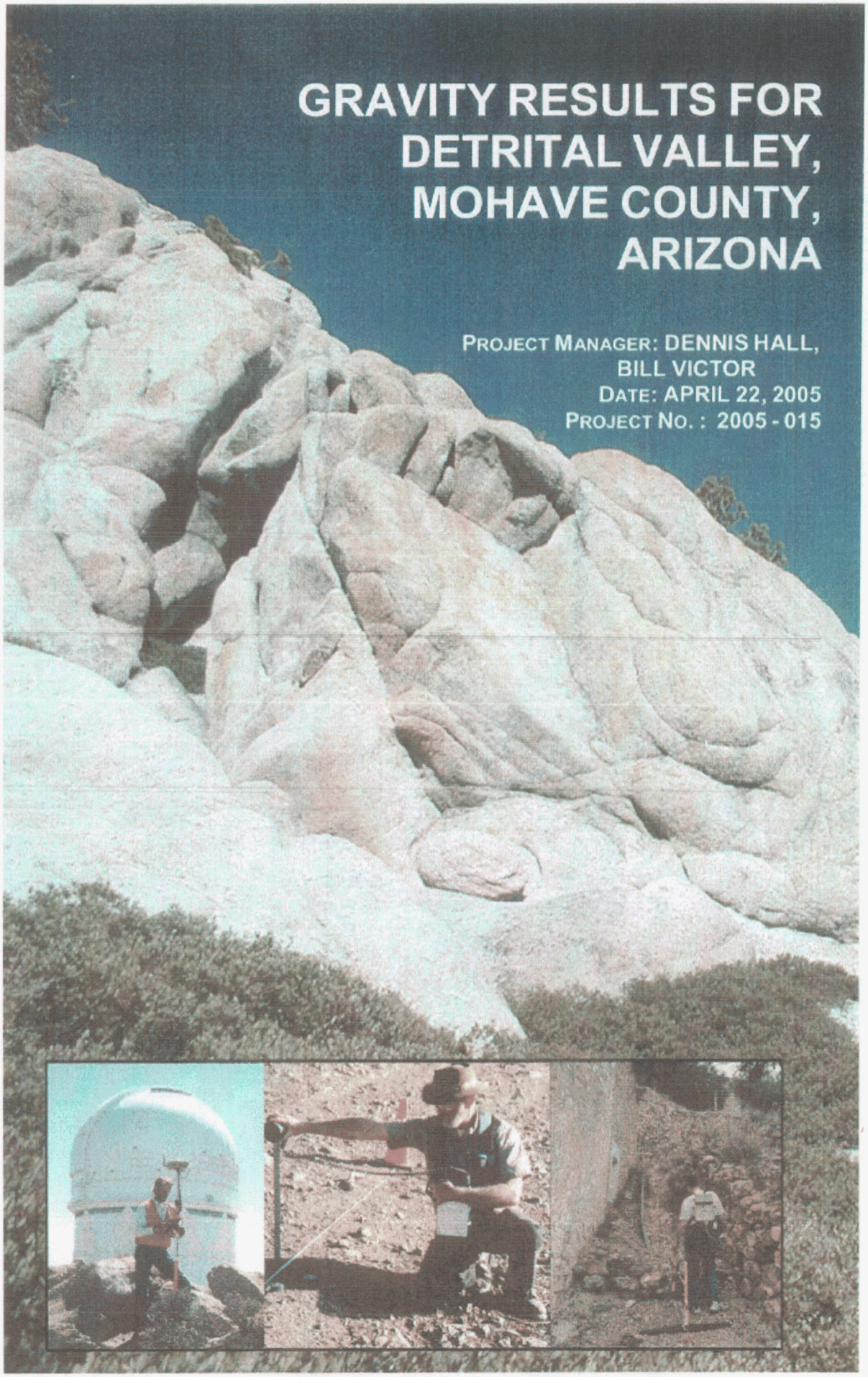
hydroGEOPHYSICS, Inc.

Geophysical Consulting and Services

GRAVITY RESULTS FOR DETRITAL VALLEY, MOHAVE COUNTY, ARIZONA

PROJECT MANAGER: DENNIS HALL, BILL VICTOR

DATE: APRIL 22, 2005
PROJECT NO. : 2005 - 015



TECHNICAL MEMORANDUM

TO: Dennis Hall, Bill Victor (Errol L. Montgomery & Associates, Inc.)

FROM: Robert McGill, Chris Baldyga (hydroGEOPHYSICS, Inc.)

SUBJECT: Gravity Results for Detrital Valley, Mohave County, Arizona

DATE: May 3, 2005

INTRODUCTION

This *privileged and confidential* technical memorandum presents the results of a gravity survey completed for the Detrital Valley area located in Mohave County, Arizona. This memorandum was prepared for Errol L. Montgomery & Associates, Inc. (ELM) by hydroGEOPHYSICS, Inc. (HGI) under ELM subconsultant agreement dated April 5th, 2005.

Purpose and Objective

The purpose of this investigation was to geophysically characterize subsurface bedrock conditions using the geophysical gravity method. The objective of this investigation was to acquire additional gravity station data that would define relatively deep and shallow subsurface bedrock areas. In turn, the results would augment the comprehension of ground water conditions within the study area. Additionally, HGI has provided six gravity models that characterize subsurface conditions.

GRAVITY SURVEY METHOD AND RESULTS

Method

Gravity is measured as acceleration due to gravitational pull, or gravitational force per unit mass. Final data values are presented in units of milligals (abbreviated mGal), which are 10^{-3} Gal (1 Gal = 1 centimeter per second per second equals 10^{-2} meters per second per second equals 10^{-2} newton per kilogram). The Earth's nominal gravity is 980 Gal.

Gravity surveying is a geophysical method that aids in determining the depth to bedrock, overall basin geometry within and surrounding a site, and relative changes in bedrock

topography. Lateral differences in gravitational attraction are caused by contrasting densities of geologic media, such as alluvium versus bedrock, along with other influences; these external influences are accounted for in processing. The information gained from the survey determines relative depth to bedrock estimates over a defined investigation area. Gravity surveying can also define the locations of possible buried geologic structures.

By acquiring several gravity measurements within a study area at discrete points, a contoured gravitational map is developed. The map is used to determine the location of lower density alluvial deposits versus higher density shallow bedrock. Acquired field data are processed and typically presented in both plan and modeled cross-sectional plots.

Logistics

Gravity data were acquired in one stage of field work from April 6th to the 15th, 2005. A total of 113 new gravity stations were established for this study. Numerous database stations acquired by the USGS (USGS Open File Report 99-435), and University of Arizona studies also exist within the site area and were incorporated during processing.

Gravity stations acquired for this investigation were located using a Garmin Etrex Vista hand-held GPS unit. Elevations were determined using a combination of topographic map elevations, digital elevation models, and GPS data.

Daily gravity loops were tied to an established base station located in front of a memorial within a park located at the intersection of West Beale Street and Grandview Avenue, Kingman, Arizona. Base station coordinates are 35.18997 north latitude and -114.05984 longitude (NAD 27). The absolute gravity value used for the base station is 97943.433 mGals.

A Scintrex Autograv Model CG-3 gravimeter (S/N 9610345) was used for gravity data acquisition. The gravimeter has internal temperature compensation and auto-leveling. The unit is capable of five mGal resolution and less than 0.001 mGal repeatability. Daily loops were tied to the afore-mentioned base station to account for instrumental drift. Horizontal locations of the gravity stations were established using a hand-held GPS Etrex Vista unit. Station elevation data were additionally quality checked against topographic contours using USGS 7.5-minute quadrangle maps.

Photo 1. View of gravity meter in the foreground, looking north towards Lake Mead. Photo was taken west of Senator Mountain.

Data Reduction

Gravity data reduction includes the following steps:

- *Conversion from dial reading to milligals.* This conversion is made using calibration constants determined from the manufacturer of the instrument.
- *Removal of solid earth tidal effects.* This correction is made by applying calculated theoretical tide corrections, which are cyclical and predictable.
- *Removal of instrumental drift.* This correction is made by periodically returning to an established base station and recording several readings so that the drift rate can be determined and removed.
- *Adjustment of milligal values to the regional base station value to produce absolute gravity values.* The raw gravity data are arbitrary values that must be "tied" to stations that have established absolute gravity values.
- *Removal of latitudinal effects.* This correction accounts for the Earth's rotation and its slightly oblate shape, both of which affect the gravitational pull as a function of latitude.
- *Correction for elevation (Free Air Anomaly or FAA).* This correction accounts for the decrease in gravity as a function of increasing elevation above the geoid.

- *Correction for the Bouguer slab (Simple Bouguer Anomaly or SBA).* This correction accounts for the attraction of earth material between the reference geoid surface and the individual station elevations.

- *Removal of terrain effects (Complete Bouguer Anomaly or CBA).* Terrain corrections are completed with local elevation data using GPS elevation data, as well as topographic contours and digital elevation model information.

A regional trend is then removed from the Complete Bouguer Anomaly data to produce the Residual Bouguer Anomaly (RBA). Removal of long wavelength signatures caused by deep seated isostatic compensation (crustal variations) enhances shallower features that are of interest to this study. A regional removal also shifts the data up to a constant datum. Usually, a statewide regional trend is subtracted and interpretation can begin.

Due to the presence of additional deep-seated isostatic effects, HGI chose to remove a planar localized regional trend from the CBA upon further inspection.

After the data were quality checked, they were integrated into HGI's proprietary gravity database. Only one point (DM-19) was rejected from the data set acquired for this study, and a few database points were rejected from the database set due to non-matching values. Elevation errors are usually the cause for station rejection.

GRAVITY RESULTS

Figure Description

Attached to this memorandum are seven figures representing the gravity data results and gravity models for the study area.

Figure 1 is a topographic base map of the study area and vicinity showing the gravity station distribution for the area, location of selected wells (requested by ELM), and RBA contoured values. This map represents the gravity results after the planar regional isostatic trend was removed. Red hued lines represent shallow or exposed bedrock, while blue hues represent increasing thicknesses of alluvium. Basin bounding fault orientations and placement are indicated on this figure using dashed black lines.

Six gravity profile locations are also shown (A-A', B-B', C-C', D-D', E-E', and F-F'). Well locations are noted as pink symbols. The location of an exposed low angle fault is also annotated on the map in red.

For Figure 1, data are presented in latitude and longitude (decimal degrees), NAD 27 datum.

Figure 2 shows the model results for gravity profile A-A'. Figure 3 shows the model results for gravity profile B-B'. Figure 4 shows the model results for gravity profile C-C'. Figure 5 shows the model results for gravity profile D-D'. Figure 6 shows the model results for gravity profile E-E'. Figure 7 shows the model results for gravity profile F-F'. These figures are discussed in detail under the Gravity Models section.

The modeled profiles were developed by the following steps:

- Preferentially orient the profiles to cross major gravity responses orthogonally (gravity modeling software must assume an infinite strike length of the modeled body in the third dimension).
- Digitize the contoured gravity responses along the chosen profiles.
- Integrate elevation data from the DEMs covering the area and gravity station elevations acquired in the field and cross-check elevations with topographic and DEM elevations.
- Import the matched topographic and gravity data into the software modeling package GM-SYS.
- Construct (initially) a simple geologic model by incorporating known geologic information.
- Refine the model by adjusting the geometry of polygonal bodies and provide the best fit of calculated versus "observed" data.
- Analyze the results and provide additional versions where appropriate if complex geology exists or if additional data exists and can be correlated.

It should be noted that the "observed" values shown on the upper pane of the modeled profiles are actually interpolated values that were extracted after kriging of the observed data was completed. Also, the base of basin sediments is shown as a range of density values for each profile (i.e. 2.0 grams per cubic centimeter provides a shallower depth estimation relative to increasing sediment density values).

For all modeled cross-sections, the upper pane represents the gravity response along the chosen profile orientation. The lower pane represents the modeled geologic section.

Interpretation

Our interpretation is based upon the general trends evident in the RBA plots, the modeled gravity profiles, and correlation with other geo-related data.

Referring to Figure 1, RBA values range from 32 to -6 milligals. The highest positive values represent exposed or relatively shallow bedrock, whereas the lower values generally represent increasing alluvial thickness.

The study area indicates two major gravity lows. The dominant gravity low occurs, and is associated with, the main portion of Detrital Valley (beginning from the lower portion of the figure up to approximately 35.75 degrees latitude). The Black Mountains located to the west of Detrital Valley form a gravity high response. Likewise, the Cerbat Mountains form a gravity high response in the southeastern portion of the image. These two mountain ranges appear to control the alluvial basin geometry within the southern portion of the study area. HGI believes that normal fault structures occur along the mountain fronts for this area, and conform to typical basin-and-range faulting.

The gravity low that extends northward from the main Detrital Valley begins to plateau at approximately 35.75 degrees latitude. Based on gravity data alone, it does not appear that relatively thick alluvium continues northward from this latitude.

A significant gravity low exists within the White Hills area, and extends east/southeast, past the limits of the image, and towards the Hualapai Valley area. Since significant thicknesses of low density salt and anhydrite are known to exist within the Hualapai Valley and Red Lake area, the main gravity low amplitudes within the study area may be augmented by the presence of low-density material, such as evaporite deposits. Indeed, ELM project personnel have confirmed encountering relatively thick sequences of evaporite deposits for the well that is located north of White Hills Road on Hitching Post Road (WH-2).

The outcrop referred to as White Hills consists (in general) of volcanic, gneissic and granitic lithologies. A low angle fault zone, located just east of the White Hills main gravity low, was also noticed in a road cut. This fault zone was approximately 30 feet thick, continuing down the slope, past the road cut. On top of the zone, angular clasts of

gneiss and granite in a matrix of locally derived silty clay were apparent. Photos 2 and 3 show this fault zone.

Photo 2. Close up view of low-angle fault zone. Angular clasts of granite and gneiss are on top, while highly fractured and weathered clasts exist in the fault gouge zone. Marker is approximately 5 ½ inches.

Photo 3. A broader view of the low-angle fault zone. Notice the marker in the center of the image at the contact for scale.

The gravity low response that is bounded by Senator Mountain to the north, and Table Mountain Plateau to the south (herein referred to as Senator Valley), suggests that an

elevated inter-montain basin exists within the area, ignoring potential effects of lower density material such as evaporite deposits. HGI is aware of a residential well that was drilled in this area to a total depth of 600 feet without encountering bedrock. It is not known what type of stratigraphy was encountered to this depth.

Typically, rock units such as granite or gneiss form hydrologic bedrock and continue to considerable depths. The gravity low response in the Senator Valley area suggests that the exposed hard rock units may be "un-rooted" and possibly (due to the existence of multiple low-angle fault structures) may have been transported from the outside of the study area to their current placement. This hypothesis needs to be supported by drilling efforts.

The White Hills gravity low appears to suggest that the Detrital and Hualapai Valleys may be hydrologically connected to some degree.

It should be noted that many different geologic conditions, or models, can cause the same gravity response, as inverse modeling using potential field geophysical methods is non-unique. HGI has used the simplest model parameters in order to evaluate bedrock geometry as well as honoring known geologic conditions.

A moderate gravity high response exists towards the north-central portion of the image, east of the main Detrital Valley area. ELM drilled an exploratory borehole in this area (WH-2) and encountered bedrock at 1,140 feet below ground surface (bgs). The gravity high response and drilling results confirm that relatively shallow bedrock exists within this area. The gravity response indicates that the bedrock high is localized.

Gravity Models

For the models, we used the following densities for the main lithologies within the study area using typical density values, as listed below.

- Basin fill – density range of 2.0 to 2.2 grams per cubic centimeter (g/cc)
- White Hills lithologic complex– density of 2.6 g/cc
- Basement – density of 2.67 g/cc

The orientations of the profiles were selected based on station control, as well as input from ELM project personnel. The ends of the models are anchored in exposed outcrop, where gravity highs occur. There was still subdued remnant regional trends noticeable

in the individual profiles. To compensate for the trends, HGI subtracted a linear trend for each profile in order to bring the profile endpoints to an equal datum. Note that these values are not reflected in the RBA plan map (Fig. 1), only within the GM-SYS profiles.

The trendline equations used are:

- A-A' Individual trend equation $y = -0.00018857x + 21.20$
- B-B' Individual trend equation $y = -0.00018502x + 25.67$
- C-C' Individual trend equation $y = -0.00022835x + 28.11$
- D-D' Individual trend equation $y = -0.00067683x + 31.07$
- E-E' Individual trend equation $y = 0.000057716x + 24.75$
- F-F' Individual trend equation $y = -0.000200651x + 23.81$

Gravity Profile A-A'

The A-A' gravity profile (Figure 2) is the northern-most profile of the set. The profile is oriented over the northern portion of Detrital Valley and the White Hills. The profile begins in the Black Mountains and ends at Grapevine Mesa. Assuming that alluvial sediments have a density of 2.0 g/cc, maximum depth to bedrock within the valley is estimated to be approximately 1,600 feet bgs. The gravity response indicates that bedrock gradually shallows to the east up to a local maximum located at 6.5 miles along the profile, where bedrock depth is approximately 1,100 feet bgs. From this point bedrock again deepens to a maximum depth of approximately 4,000 feet below the land surface at 11.2 miles along profile. From this point, bedrock gradually shallows to surface near Grapevine Mesa.

As stated before, many other plausible geologic parameters could cause the same gravity response.

Gravity Profile B-B'

Gravity model B-B' (Figure 3) intercepts ELM exploratory boreholes WH-1 and WH-2. WH-2 was used to constrain the depth to bedrock to 1,140 feet bgs at this location. Thus, it appears that using 2.0 g/cc is most representative for basin fill. The east flank of the Black Mountains is interpreted to be fault controlled. Alluvial thickness within the center

of the valley is estimated (using 2.0 g/cc) to be more than 2,000 feet. ELM exploratory borehole WH-1 L did not encounter bedrock to a total depth of 2,008 feet bgs.

Bedrock topography is relatively horizontal from WH-2 eastward to approximately 12 miles along section, where the model indicates a possible buried fault structure at depth, directly beneath the White Hills. If the White Hills are unrooted, maximum thickness of alluvium beneath the White Hills is estimated to be approximately 2,500 feet. The bedrock topography gradually shallows from this structure as a function of northeastern distance along profile.

Gravity Profile C-C'

Gravity model C-C' (Figure 4) indicates that the western side of Detrital Valley is structurally controlled. Alluvial thickness within Detrital Valley is estimated to be approximately 2,500 feet. Bedrock topography is relatively flat to greatly sloping along most of the section, which contrasts to the White Hills topographic profile. If the White Hills are unrooted, alluvium may be as thick as 3,200 feet near 18 miles along profile. From this point, the bedrock changes slope four times before exposure, west of Grapevine Mesa.

Gravity Profile D-D'

Gravity model D-D' (Figure 5) indicates that the western side of Detrital Valley is structurally controlled. Using the density of 2.0 g/cc, alluvial thickness is estimated to be nearly 6,000 feet at the center of the basin. The profile ends in the Cerbat Mountains.

Gravity Profile E-E'

Gravity model E-E' (Figure 6) indicates that the bedrock topography along the western side of Detrital Valley towards the Black Mountains possesses a relatively low angle slope until approximately 3.5 miles along profile. This change in slope, and the localized RBA gravity response signature for this area (Fig. 1) may indicate a sympathetic step-fault structure.

Using the density of 2.0 g/cc, alluvial thickness is estimated to be approximately 5,000 feet at the center of the basin. The eastern edge of the basin has a more pronounced bedrock slope, indicating a pediment fault. The profile ends in the Cerbat Mountains.

Gravity Profile F-F'

Gravity model F-F' (Figure 7) indicates that the bedrock topography along the western and eastern basin margins are structurally controlled. The bedrock drop-off rate is more pronounced along the western margin. Using the density of 2.0 g/cc, alluvial thickness is estimated to be approximately 2,400 feet at the center of the basin. The profile ends in the Cerbat Mountains.

CONCLUSIONS & RECOMMENDATIONS

The gravity results sufficiently define the overall geometry of bedrock topography within the study area. Additional gravity stations within the study area would help refine gravity gradients. However, the current gravity coverage is deemed sufficient for geophysical definition of bedrock and subsurface conditions.

The gravity model results indicate that maximum thickness of alluvium within the Detrital Valley basin ranges from over 2,000 feet to 6,000 feet. The models also suggest that the White Hills and Senator Valley areas may support an elevated intermontane basin that was subsequently covered by granitic and volcanic rock types, either by thrust faulting or low-angle gravity slide faulting. Although this is conjecture compared to rooted mountain systems, the existence of such a strong gravity low indicates that deep deposits of low density material exist beneath the White Hills.

Referring to Figure 7 (gravity model F-F'), an alluvial basin embayment extends into the Black Mountains locally, as shown within the profile between 3.8 to 6.5 miles along the section.

The results reported herein are valid within the limits of the coverage and the resolution of the methods used. HGI hopes these results and acquired data prove beneficial towards ELM's efforts in characterizing the hydrogeology of the study area.

Robert L. McGill, EIT, PG (WA)
Senior Project Engineer/Principal

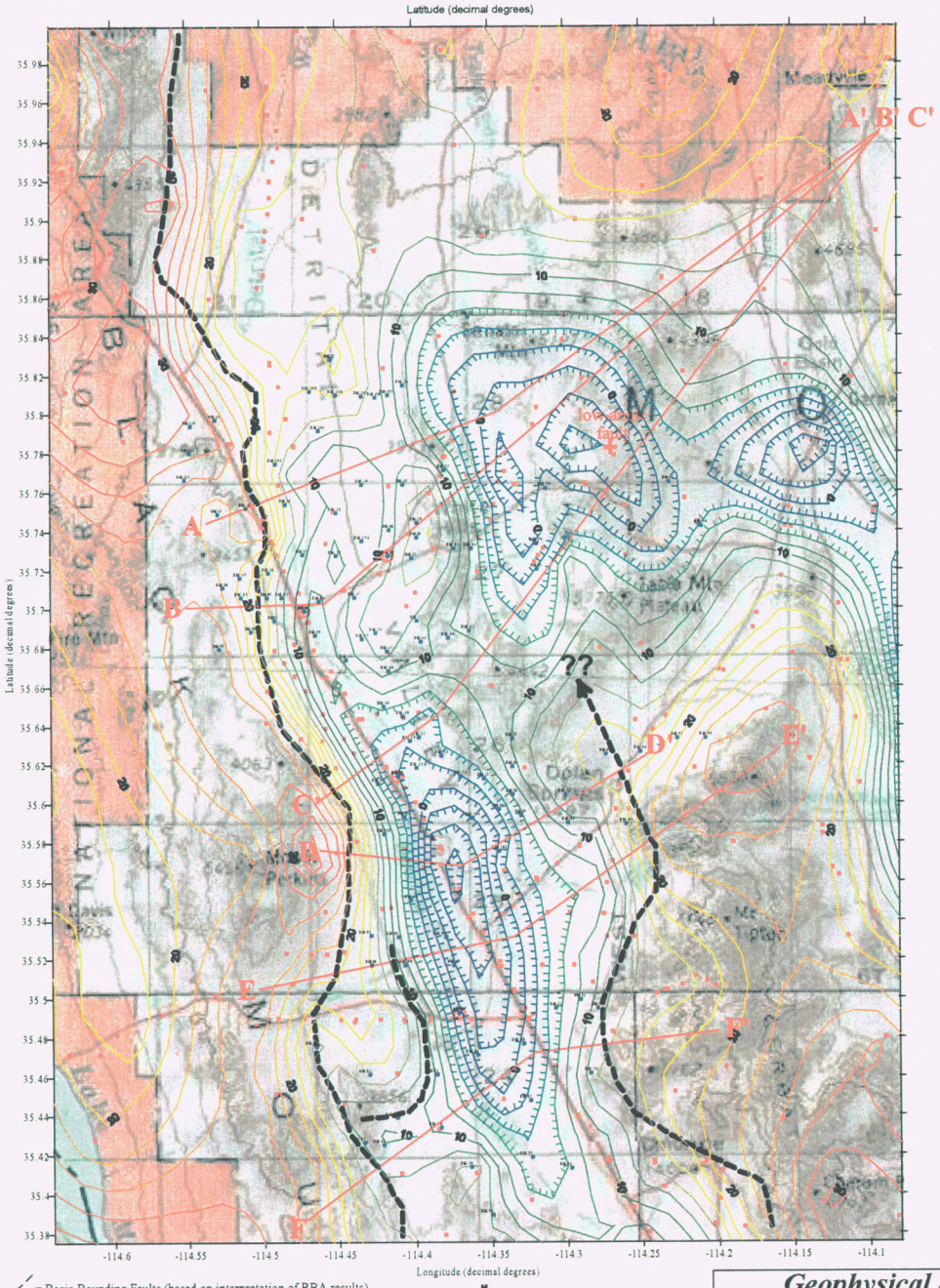
Christopher A. Baldyga, MSc
Geophysicist

COPY /Files
Attachments /Figs. 1, 2, 3, 4, 5, 6, 7

J:\2005-015 Montgomery Detrital Valley grav\Report\2005-015-ELM-Gravity Survey Detrital Valley-Final-rlm.doc

hydroGEOPHYSICS, Inc.

Residual Bouguer Anomaly Map



= Basin Bounding Faults (based on interpretation of RBA results)

= Well Locations

= Existing Gravity Stations (HGI database)

= hydroGEOPHYSICS, Inc. Gravity Stations

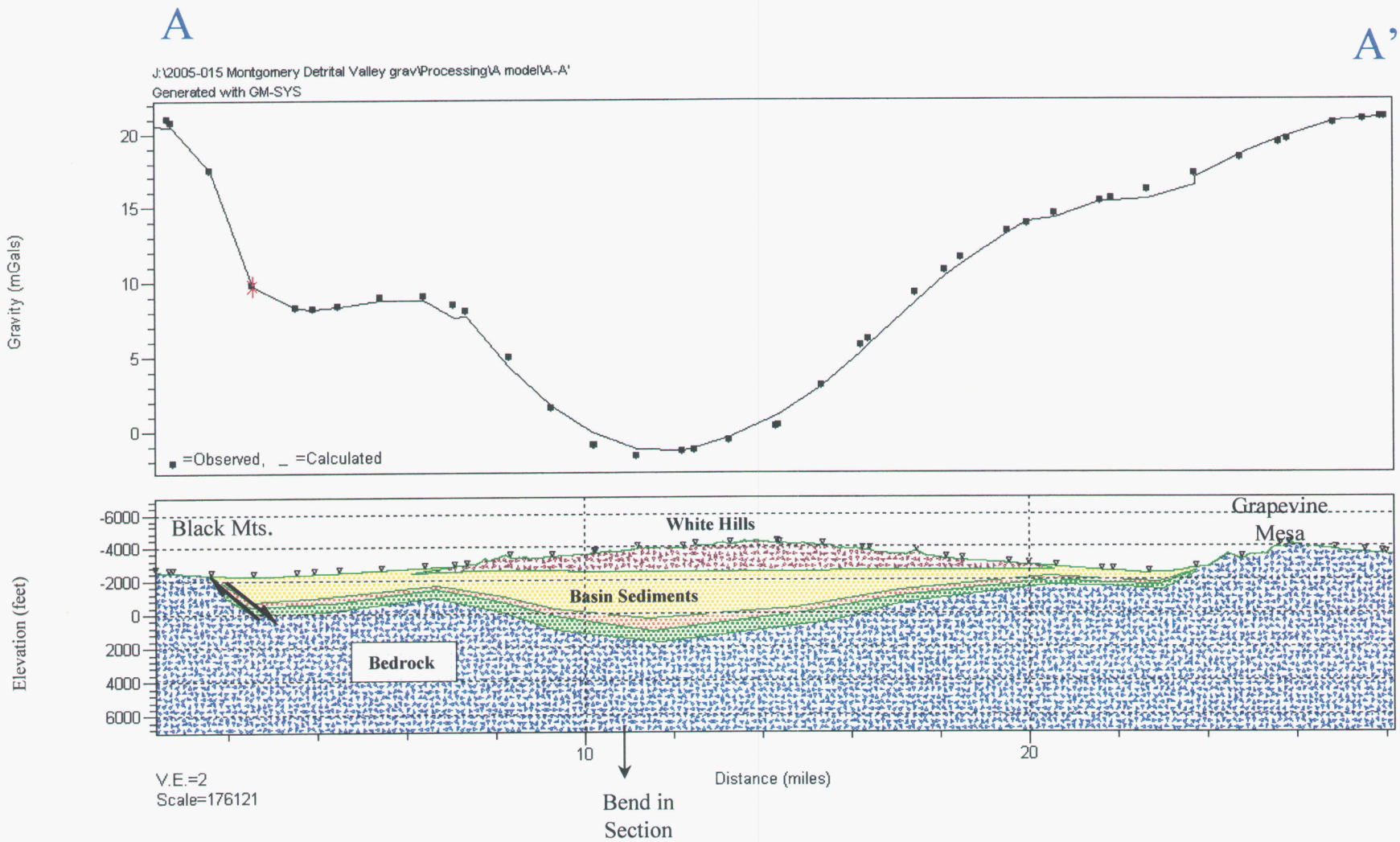
Contour Interval: 2 mGal

Geophysical Survey	
E.L. Montgomery & Assoc. Detrital Valley	
Date: Apr 2005	Fig: 1

FILE: 2005-015 RBA on Topo2 | 2005-015 | 05/04/05 12:08:46 | 2502 N. Forbes Blvd. ▪ Tucson, AZ 85745 ▪ (520) 647-3315

Figure 2

A-A' Gravity Profile (looking north)



Basin Sediment Density = 2.0 g/cc

Basin Sediment Density = 2.1 g/cc

Basin Sediment Density = 2.2 g/cc

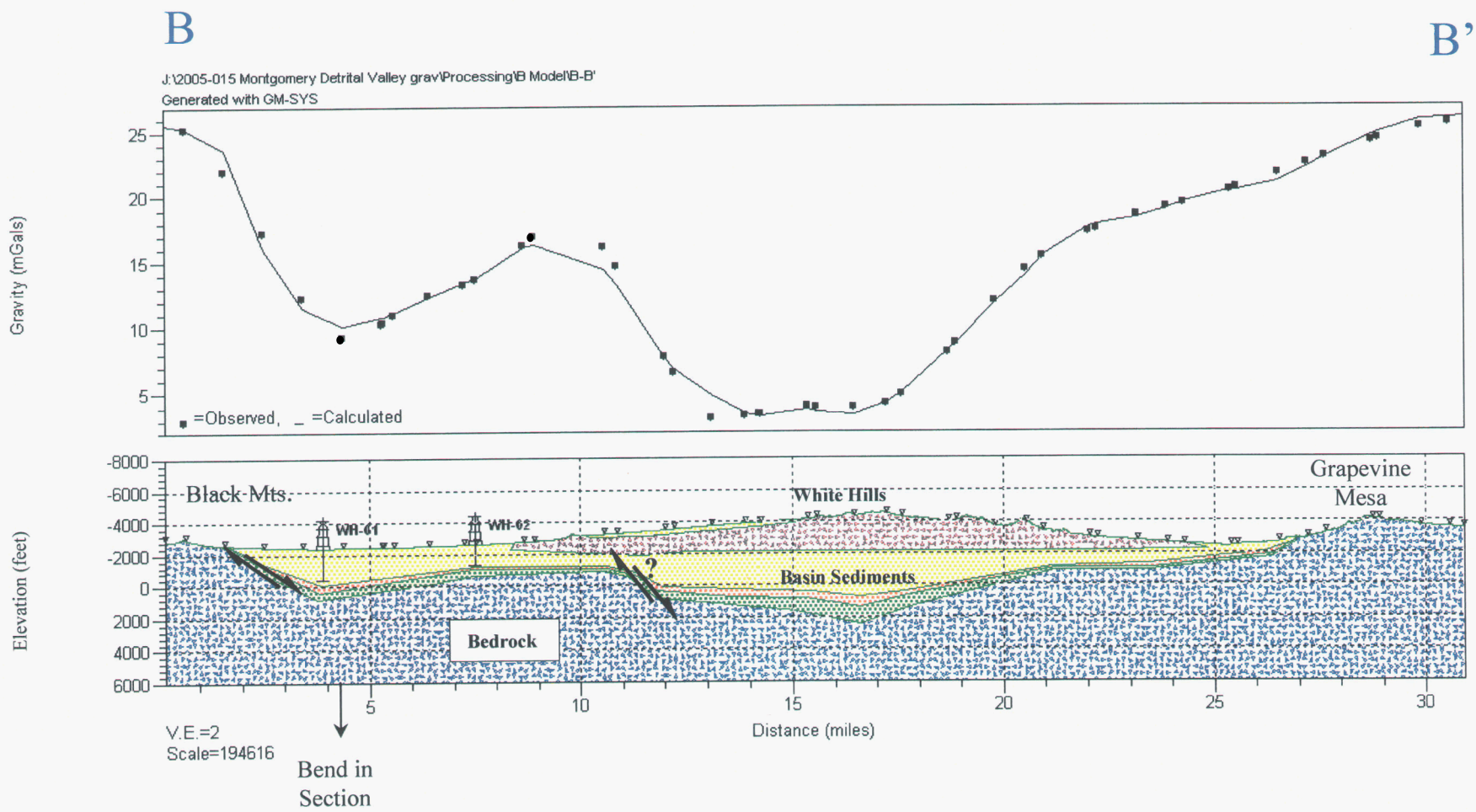
White Hills Density = 2.6 g/cc

Bedrock Density = 2.67 g/cc

Geophysical Survey	
14742	E.L. Montgomery & Assoc. Detrital Valley
	Date: *Apr 2005* Fig: 2

Figure 3

B-B' Gravity Profile (looking north)



Basin Sediment Density = 2.0 g/cc

Basin Sediment Density = 2.1 g/cc

Basin Sediment Density = 2.2 g/cc

White Hills Density = 2.6 g/cc

Bedrock Density = 2.67 g/cc

Geophysical Survey	
E.L. Montgomery & Assoc. Detrital Valley	
Date: Apr 2005	Fig: 3

14742

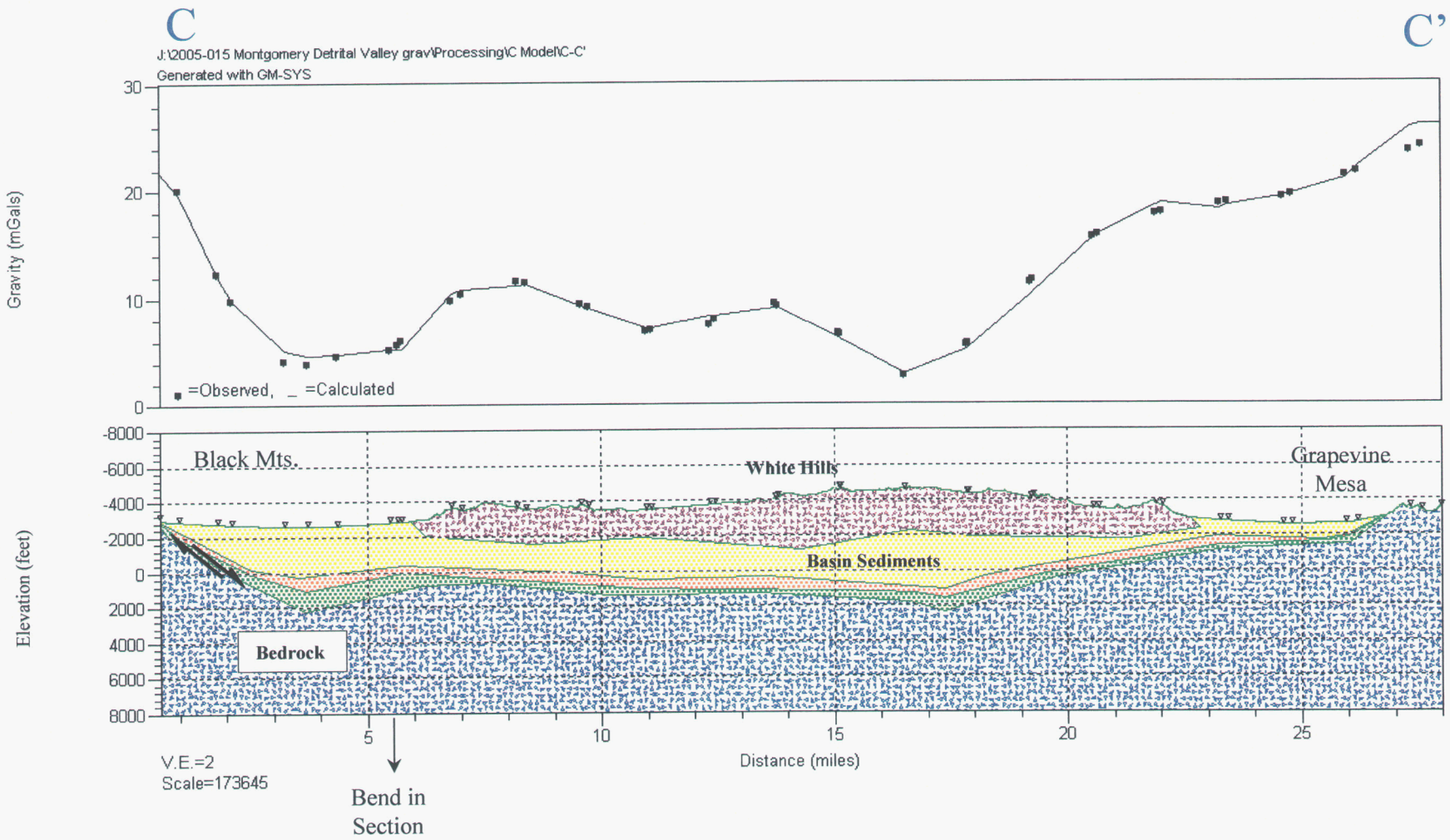
2005-015

FILE: 2005-015 ELM Detrital Valley Gravity Profiles.ppt

2302 N. Forbes Blvd • Tucson, AZ 85745 • (520) 647-3315

Figure 4

C-C' Gravity Profile (looking north)



Basin Sediment Density = 2.0 g/cc

Basin Sediment Density = 2.1 g/cc

Basin Sediment Density = 2.2 g/cc

White Hills Density = 2.6 g/cc

Bedrock Density = 2.67 g/cc

Geophysical Survey	
E.L. Montgomery & Assoc. Detrital Valley	
Date: Apr 2005	Fig: 4

14742

2005-015

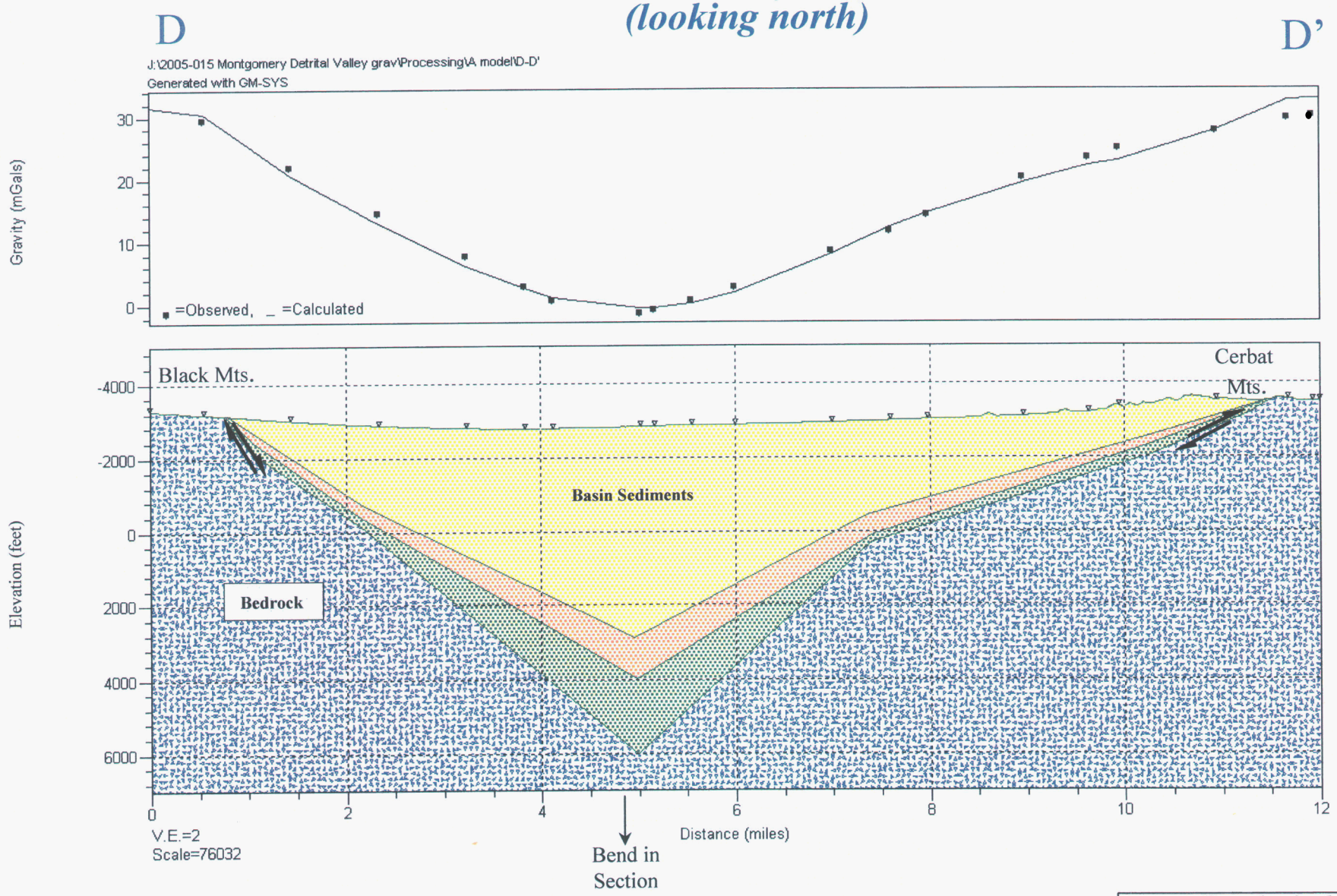
FILE: 2005-015 ELM Detrital Valley Gravity Profiles.ppt

2302 N. Forbes Blvd • Tucson, AZ 85745 • (520) 647-3315

hydroGEOPHYSICS, Inc.

Figure 5

D-D' Gravity Profile (looking north)



Basin Sediment Density = 2.0 g/cc

Basin Sediment Density = 2.1 g/cc

Basin Sediment Density = 2.2 g/cc

White Hills Density = 2.6 g/cc

Bedrock Density = 2.67 g/cc

Geophysical Survey	
E.L. Montgomery & Assoc. Detrital Valley	
Date: Apr 2005	Fig: 5

14742

2302 N Forbes Blvd. • Tucson, AZ 85745 • (520) 647-3315

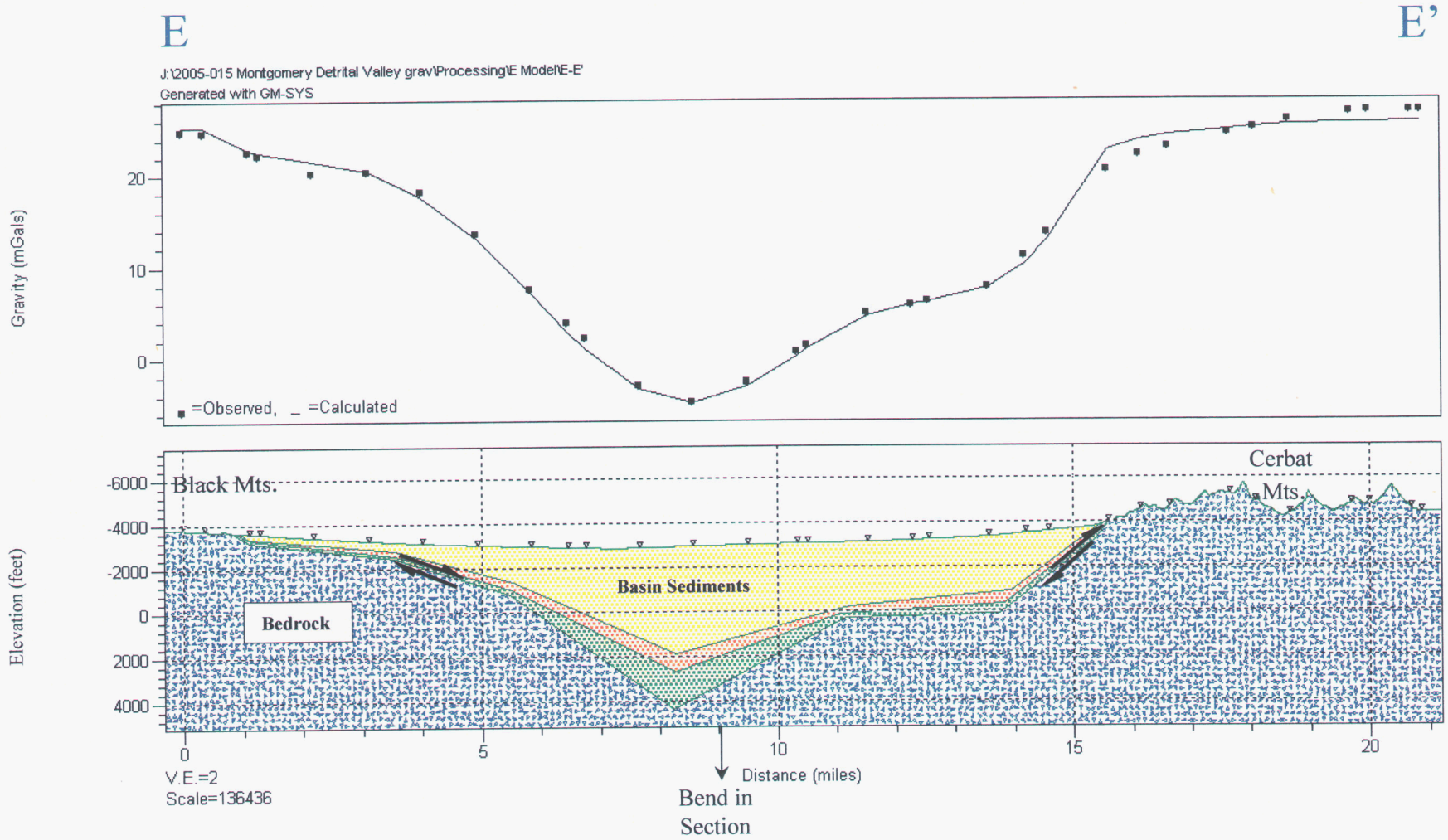
2005-015

FILE: 2005-015 ELM Detrital Valley Gravity Profiles.ppt

hydroGEOPHYSICS, Inc.

Figure 6

E-E' Gravity Profile (looking north)



Basin Sediment Density = 2.0 g/cc

Basin Sediment Density = 2.1 g/cc

Basin Sediment Density = 2.2 g/cc

White Hills Density = 2.6 g/cc

Bedrock Density = 2.67 g/cc

Geophysical Survey	
E.L. Montgomery & Assoc. Detrital Valley	
Date: Apr 2005	Fig: 6

14742

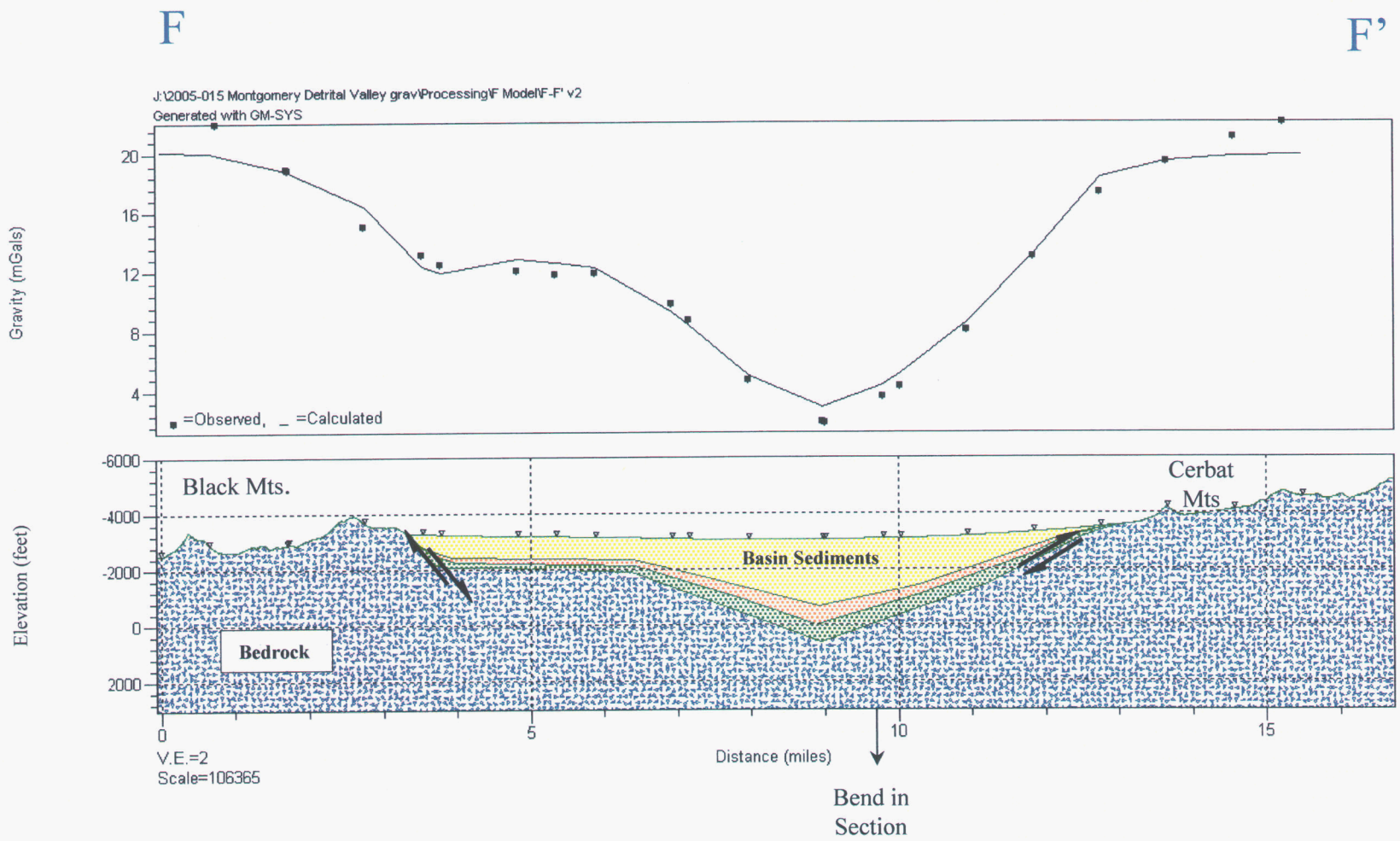
2302 N. Forbes Blvd. • Tucson, AZ 85745 • (520) 647-3315

2005-015

FILE: 2005-015 ELM Detrital Valley Gravity Profiles.ppt

Figure 7

F-F' Gravity Profile (looking north)



Basin Sediment Density = 2.0 g/cc

Basin Sediment Density = 2.1 g/cc

Basin Sediment Density = 2.2 g/cc

White Hills Density = 2.6 g/cc

Bedrock Density = 2.67 g/cc

Geophysical Survey	
E.L. Montgomery & Assoc. Detrital Valley	
Date: Apr 2005	Fig: 7

14742

ERROL L. MONTGOMERY & ASSOCIATES, INC.

APPENDIX D

ANALYTICAL MODEL

THWELLS MODEL WELL LOCATIONS, PUMPING RATES,
AQUIFER PARAMETERS, AND MODEL RESULTS

TABLE D-1. MODEL WELL LOCATIONS, PUMPING RATES, AND AQUIFER PARAMETERS FOR WATER DEMAND OF 16,320 ACRE-FEET PER YEAR WITH TWO AQUIFER BOUNDARIES

WELL TYPE	X COORDINATE (UTM, meters) [a]	Y COORDINATE (UTM, meters) [a]	Arizona State Plane X (International Feet)	Arizona State Plane Y (International Feet)	MODEL PUMPING RATE (gpm) [b]	MODEL PUMPING RATE (gpd) [c]	Drawdown 440gpm (feet)
WHITE HILLS WELLS							
Pumping Well 1 (WH-1)	185836.60	3955971.00	485428.73	1710703.96	440	633,600	807.111
Pumping Well 2 (WH-2)	191031.80	3958884.00	502185.11	1720727.18	440	633,600	821.766
Pumping Well 3 (WH-3)	187947.50	3958178.00	492143.01	1718130.05	440	633,600	838.397
Pumping Well 4	187855.89	3959823.26	491691.49	1723512.96	440	633,600	807.954
Pumping Well 5	187823.84	3958877.88	491673.43	1720412.12	440	633,600	826.834
Pumping Well 6	187791.79	3957499.88	491695.12	1715893.60	440	633,600	838.718
Pumping Well 7	187663.61	3956570.53	491360.49	1712836.43	440	633,600	830.757
Pumping Well 8	189314.01	3958124.79	496625.82	1718081.32	440	633,600	845.347
Pumping Well 9	188592.96	3957772.28	494295.42	1716859.87	440	633,600	846.186
Pumping Well 10	188592.96	3957067.25	494360.23	1714549.57	440	633,600	841.548
Pumping Well 11	189265.94	3956634.62	496605.30	1713193.73	440	633,600	831.310
Pumping Well 12	189458.22	3959759.17	496948.08	1723450.32	440	633,600	820.391
Pumping Well 13	189458.22	3958974.02	497020.29	1720877.47	440	633,600	837.406
Pumping Well 14	190195.29	3959326.54	499403.21	1722100.42	440	633,600	827.667
Pumping Well 15	190163.24	3958573.44	499367.46	1719629.62	440	633,600	838.317
Pumping Well 16	190948.39	3958060.69	501987.47	1718021.57	440	633,600	827.262
Pumping Well 17	190916.34	3957339.65	501948.75	1715655.77	440	633,600	823.054
Pumping Well 18	190900.32	3956570.53	501966.95	1713133.92	440	633,600	810.609
Pumping Well 19	189762.66	3957387.72	498163.79	1715707.24	440	633,600	839.205
Pumping Well 20	187631.56	3955064.33	491393.90	1707897.87	440	633,600	803.626
Pumping Well 21	186894.49	3955496.96	488938.84	1709247.82	440	633,600	812.759
Pumping Well 22	186718.23	3956362.22	488281.75	1712066.96	440	633,600	820.831
Pumping Well 23	186013.20	3955144.45	486083.39	1708011.71	440	633,600	799.355
East Image Wells							
Image Well E1 (WH-1)	201892.91	3962219.52	537470.81	1732657.16	440	633,600	---
Image Well E2 (WH-2)	196095.29	3960854.52	518596.94	1727650.38	440	633,600	---
Image Well E3 (WH-3)	198845.47	3962419.08	527465.53	1733030.67	440	633,600	---
Image Well E4	197800.86	3963693.47	523924.93	1737110.82	440	633,600	---
Image Well E5	198463.51	3963018.45	526158.63	1734959.70	440	633,600	---
Image Well E6	199418.59	3962024.59	529380.04	1731790.65	440	633,600	---
Image Well E7	200141.26	3961426.36	531803.37	1729896.67	440	633,600	---
Image Well E8	197874.40	3961456.17	524371.85	1729785.75	440	633,600	---
Image Well E9	198644.05	3961683.78	526873.15	1730602.49	440	633,600	---
Image Well E10	199120.62	3961164.22	528482.72	1728943.67	440	633,600	---
Image Well E11	198917.11	3960390.49	527886.98	1726389.34	440	633,600	---
Image Well E12	196663.36	3962563.14	520301.30	1733301.91	440	633,600	---
Image Well E13	197194.08	3961984.53	522093.76	1731454.62	440	633,600	---
Image Well E14	196412.62	3961746.09	519554.80	1730601.30	440	633,600	---
Image Well E15	196945.29	3961212.76	521349.49	1728902.57	440	633,600	---
Image Well E16	196713.28	3960304.17	520672.76	1725903.71	440	633,600	---
Image Well E17	197224.29	3959794.46	522394.28	1724280.35	440	633,600	---
Image Well E18	197755.99	3959238.50	524187.83	1722507.29	440	633,600	---
Image Well E19	198041.99	3960609.72	524998.97	1727027.26	440	633,600	---
Image Well E20	201182.99	3960338.05	535317.42	1726425.92	440	633,600	---
Image Well E21	201433.74	3961155.10	536063.97	1729126.62	440	633,600	---
Image Well E22	200978.75	3961911.88	534503.27	1731564.87	440	633,600	---
Image Well E23	202321.47	3961491.02	538942.33	1730309.19	440	633,600	---

TABLE D-1. MODEL WELL LOCATIONS, PUMPING RATES, AND AQUIFER PARAMETERS FOR WATER DEMAND OF 16,320 ACRE-FEET PER YEAR WITH TWO AQUIFER BOUNDARIES

WELL TYPE	X COORDINATE (UTM, meters) [a]	Y COORDINATE (UTM, meters) [a]	Arizona State Plane X (International Feet)	Arizona State Plane Y (International Feet)	MODEL PUMPING RATE (gpm) [b]	MODEL PUMPING RATE (gpd) [c]	Drawdown 440gpm (feet)
West Image Wells							
Image Well W1 (WH-1)	181600.21	3955108.46	471626.15	1707488.32	440	633,600	---
Image Well W2 (WH-2)	175679.62	3955758.25	452166.40	1709073.49	440	633,600	---
Image Well W3 (WH-3)	178794.43	3956314.41	462321.51	1711182.07	440	633,600	---
Image Well W4	178235.46	3957864.51	460347.44	1716209.90	440	633,600	---
Image Well W5	178634.59	3957006.93	461734.12	1713436.55	440	633,600	---
Image Well W6	179202.88	3955751.15	463711.66	1709373.98	440	633,600	---
Image Well W7	179684.24	3954945.90	465362.93	1706779.64	440	633,600	---
Image Well W8	177557.51	3955731.13	458322.11	1709157.18	440	633,600	---
Image Well W9	178358.99	3955688.61	460952.22	1709091.50	440	633,600	---
Image Well W10	178634.65	3955039.71	461915.11	1706990.58	440	633,600	---
Image Well W11	178184.41	3954378.39	460500.54	1704782.27	440	633,600	---
Image Well W12	176785.75	3957179.01	455660.21	1713830.49	440	633,600	---
Image Well W13	177092.73	3956456.38	456732.53	1711490.86	440	633,600	---
Image Well W14	176276.51	3956492.63	454054.70	1711534.65	440	633,600	---
Image Well W15	176600.46	3955812.02	455178.73	1709334.28	440	633,600	---
Image Well W16	176078.30	3955033.10	453539.38	1706734.07	440	633,600	---
Image Well W17	176389.73	3954381.99	454619.62	1704629.20	440	633,600	---
Image Well W18	176705.20	3953680.36	455717.77	1702359.19	440	633,600	---
Image Well W19	177432.77	3954877.31	457991.82	1706348.04	440	633,600	---
Image Well W20	180302.65	3953572.15	467515.50	1702335.02	440	633,600	---
Image Well W21	180811.89	3954258.53	469121.09	1704630.89	440	633,600	---
Image Well W22	180635.80	3955123.82	468464.60	1707450.05	440	633,600	---
Image Well W23	181760.85	3954278.66	472228.75	1704784.02	440	633,600	---

[a] UTM, meters = Universal Transverse Mercator coordinates, in meters
[b] gpm = Gallons per minute
[c] gpd = Gallons per day
Confined Aquifer, English units

T = 29,000 gpd/ft
S = 0.001
b = 500 feet
time = 100 years = 36525 days

TABLE D-2. MODEL WELL LOCATIONS, PUMPING RATES, AND AQUIFER PARAMETERS FOR WATER DEMAND OF 22,260 ACRE-FEET PER YEAR WITH ONE AQUIFER BOUNDARY

WELL TYPE	X COORDINATE (UTM, meters) [a]	Y COORDINATE (UTM, meters) [a]	Arizona State Plane X (International Feet)	Arizona State Plane Y (International Feet)	MODEL PUMPING RATE (gpm) [b]	MODEL PUMPING RATE (gpd) [c]	Drawdown 600gpm (feet)
WHITE HILLS WELLS							
Pumping Well 1 (WH-1)	185836.60	3955971.00	485428.73	1710703.96	600	864,000	826.109
Pumping Well 2 (WH-2)	191031.80	3958884.00	502185.11	1720727.18	600	864,000	785.433
Pumping Well 3 (WH-3)	187947.50	3958178.00	492143.01	1718130.05	600	864,000	844.699
Pumping Well 4	187855.89	3959823.26	491691.49	1723512.96	600	864,000	800.44
Pumping Well 5	187823.84	3958877.88	491673.43	1720412.12	600	864,000	828.292
Pumping Well 6	187791.79	3957499.88	491695.12	1715893.60	600	864,000	848.659
Pumping Well 7	187663.61	3956570.53	491360.49	1712836.43	600	864,000	842.178
Pumping Well 8	189314.01	3958124.79	496625.82	1718081.32	600	864,000	840.798
Pumping Well 9	188592.96	3957772.28	494295.42	1716859.87	600	864,000	850.481
Pumping Well 10	188592.96	3957067.25	494360.23	1714549.57	600	864,000	846.845
Pumping Well 11	189265.94	3956634.62	496605.30	1713193.73	600	864,000	828.600
Pumping Well 12	189458.22	3959759.17	496948.08	1723450.32	600	864,000	800.252
Pumping Well 13	189458.22	3958974.02	497020.29	1720877.47	600	864,000	825.494
Pumping Well 14	190195.29	3959326.54	499403.21	1722100.42	600	864,000	802.458
Pumping Well 15	190163.24	3958573.44	499367.46	1719629.62	600	864,000	820.067
Pumping Well 16	190948.39	3958060.69	501987.47	1718021.57	600	864,000	798.078
Pumping Well 17	190916.34	3957339.65	501948.75	1715655.77	600	864,000	796.856
Pumping Well 18	190900.32	3956570.53	501966.95	1713133.92	600	864,000	784.906
Pumping Well 19	189762.66	3957387.72	498163.79	1715707.24	600	864,000	830.919
Pumping Well 20	187631.56	3955064.33	491393.90	1707897.87	600	864,000	811.556
Pumping Well 21	186894.49	3955496.96	488938.84	1709247.82	600	864,000	827.712
Pumping Well 22	186718.23	3956362.22	488281.75	1712066.96	600	864,000	836.972
Pumping Well 23	186013.20	3955144.45	486083.39	1708011.71	600	864,000	817.009
West Image Wells							
Image Well W1 (WH-1)	181600.21	3955108.46	471626.15	1707488.32	600	864,000	---
Image Well W2 (WH-2)	175679.62	3955758.25	452166.40	1709073.49	600	864,000	---
Image Well W3 (WH-3)	178794.43	3956314.41	462321.51	1711182.07	600	864,000	---
Image Well W4	178235.46	3957864.51	460347.44	1716209.90	600	864,000	---
Image Well W5	178634.59	3957006.93	461734.12	1713436.55	600	864,000	---
Image Well W6	179202.88	3955751.15	463711.66	1709373.98	600	864,000	---
Image Well W7	179684.24	3954945.90	465362.93	1706779.64	600	864,000	---
Image Well W8	177557.51	3955731.13	458322.11	1709157.18	600	864,000	---
Image Well W9	178358.99	3955688.61	460952.22	1709091.50	600	864,000	---
Image Well W10	178634.65	3955039.71	461915.11	1706990.58	600	864,000	---
Image Well W11	178184.41	3954378.39	460500.54	1704782.27	600	864,000	---
Image Well W12	176785.75	3957179.01	455660.21	1713830.49	600	864,000	---
Image Well W13	177092.73	3956456.38	456732.53	1711490.86	600	864,000	---
Image Well W14	176276.51	3956492.63	454054.70	1711534.65	600	864,000	---
Image Well W15	176600.46	3955812.02	455178.73	1709334.28	600	864,000	---
Image Well W16	176078.30	3955033.10	453539.38	1706734.07	600	864,000	---
Image Well W17	176389.73	3954381.99	454619.62	1704629.20	600	864,000	---
Image Well W18	176705.20	3953680.36	455717.77	1702359.19	600	864,000	---
Image Well W19	177432.77	3954877.31	457991.82	1706348.04	600	864,000	---
Image Well W20	180302.65	3953572.15	467515.50	1702335.02	600	864,000	---
Image Well W21	180811.89	3954258.53	469121.09	1704630.89	600	864,000	---
Image Well W22	180635.80	3955123.82	468464.60	1707450.05	600	864,000	---
Image Well W23	181760.85	3954278.66	472228.75	1704784.02	600	864,000	---

[a] UTM, meters = Universal Transverse Mercator coordinates, in meters
[b] gpm = Gallons per minute
[c] gpd = Gallons per day
Confined Aquifer, English units

time = 100 years = 36525 days
T = 29,000 gpd/ft
S = 0.001

SW-20379A-05-0489
W-20380A-05-0490

PART 1 OF 2
BAR CODE # 0000064954

To review Part 2 please see:

BAR CODE #0000064958