

96089077

E23 D003C

0612

E-23
f 8-9-96

OK

EASEMENT TO AMAFCA
AND EASEMENT TO OWNERS ASSOCIATION
IN TRACT 14 AT HIGH DESERT, IN THE HIGHELANDS SUBDIVISION

HIGH DESERT INVESTMENT CORPORATION, a New Mexico corporation ("Grantor"), the ALBUQUERQUE METROPOLITAN ARROYO FLOOD CONTROL AUTHORITY, a political subdivision of the State of New Mexico ("AMAFCA"), and the HIGH DESERT RESIDENTIAL OWNERS ASSOCIATION, INC., a New Mexico nonprofit corporation (the "Owners Association") agree:

1. Recitals

A. Albuquerque Academy granted a "Drainage Easement to AMAFCA (Tract 14)" (the "Tract 14 Drainage Easement"), dated January 4, 1995, recorded January 9, 1995 in Book 95-1, pages 5294 to 5299, records of Bernalillo County, New Mexico. Grantor is the sole owner of the easement property (the "Property") as described on Exhibit A to the Tract 14 Easement. The Property is located within Tract 14 at High Desert. This Drainage Easement amends, restates and replaces the Tract 14 Drainage Easement in its entirety.

B. The Owners Association was established for the administration of certain obligations pertaining to homes to be located adjacent to and in the vicinity of the Property.

C. The Property possesses arroyos which are paths for storm water drainage, but also possesses open space values that are of great importance.

D. Grantor desires that to the extent possible, without restricting the rights of AMAFCA granted pursuant to this easement, the Property be preserved for drainage and open space

0613

and that the primary function of the arroyos, which is for drainage, be consistent, in as much as possible, with the natural open space nature of the Property.

2. Definitions. The following terms have the following meanings:

A. Level One Maintenance means:

i. removal from the Property of garbage and debris including but not limited to paper, cans and bottles;

ii. pruning of vegetation, removal of dead and dying plant material and thinning of vegetation to prevent choking or congestion of the arroyos situated on the Property;

iii. enhancement of vegetation through the addition of specimens native to the vicinity of the Property, provided however, that, the addition of such native specimens will not be in such a manner which reduces or restricts arroyo flows, or redirects arroyo flows to cause damage. In general, most specimens, especially woody varieties, will only be allowed along arroyo banks, or in vegetated "islands" in the middle of the arroyo which will not impair arroyo flows or induce bank erosion;

iv. the installation and maintenance of water harvesting devices in any situation or at any time the Owners Association determines necessary or desirable, subject to prior approval of AMAFCA, such approval not to be unreasonably withheld;

STATE OF NEW MEXICO
COUNTY OF BERNALILLO
FILED FOR RECORD

1996 AUG -9 PM 3:34

9622
BK PG 612-634
JUDY D. WOODWARD
CO. CLERK & RECORDER
DEPUTY
Dmoules

v. removal and control of pests and rodents; and

vi. other measures intended primarily to preserve or enhance the aesthetic values of the Property, without restricting arroyo flows.

B. Level Two Maintenance means:

i. repair of minor erosion of arroyo banks (generally three feet high or less) by hand or machine grading, in order to:

a. fill in steep banks which are enticements for digging by children or others;

b. correct hazardous bank conditions which could lead to unexpected falls and injury; and

c. arrest the potential for a significant change of course by the arroyo;

ii. cleaning of culverts and culvert entrances;

iii. construction of minor erosion control measures, using primarily native materials, along arroyo banks, at drainage outfalls to the arroyo, at water harvesting structures, below culverts and road crossings, at utility crossings of arroyos, and at any other place where continued neglect could or would lead to Level Three Maintenance or higher;

iv. reseeding of disturbed areas, using native seed mix and/or native plants/bushes. Provided however, that, plantings will not be made which obstruct arroyo flows or

direct arroyo flows in a manner or direction which can cause harmful erosion or damage; and

v. other measures intended to preserve the capacity and flow path of the Property's arroyos, and to correct safety hazards.

C. Level Three Maintenance means:

i. repair of major erosion of arroyo banks (over three feet high) by machine grading or filling, including the hauling in and placing of fill against the banks and including the temporary (180 days or less) storage of sediment within the limits of the Prudent Lines (defined below) or in other areas as may be approved by the Owners Association;

ii. stabilization of arroyo horizontal or vertical migration by installation of permanent grade control structures or permanent bank stabilization structures (Permanent Improvements) (defined below), in particular in situations in which the Prudent Line (defined below) is threatened,

iii. installation of permanent scour protection below culverts, dip crossings, or other points where flow has been concentrated;

iv. emergency protection of utility crossings of arroyos as AMAFCA deems necessary pending installation of permanent erosion protection by the responsible utility or entity;

v. other measures intended to preserve and protect the 100 Year Design Storm Capacity (defined below) of the arroyos and/or any of its improvements.

D. Level Four Maintenance means:

i. measures taken to protect public safety and prevent property damage, generally immediately after a significant flood event, when such measures clearly dominate over such considerations as aesthetics and preservation of flora and fauna. This includes the temporary storage of sediment within the limits of the Prudent Lines, and if necessary, in such areas outside the Prudent Lines as would be mutually agreeable to AMAFCA and the Owners Association;

ii. restoration or preservation of the Prudent Line, both by short term or permanent measures using Permanent Improvements;

iii. restoration or repair of any Permanent Improvements; and

iv. any measures deemed by AMAFCA to be urgent or an emergency, intended to restore the 100 Year Design Storm (defined below) capacity of the arroyo and which, if not performed, are likely to lead to threats to life or property.

E. The physical limits of the Drainage Easement have been set at the Prudent Line for each of the arroyos covered by this Drainage Easement. The Prudent Line (or Erosion Limit Line) is that line which will not be disturbed by erosion, scour, or meandering of a natural (unlined) arroyo, channel or

watercourse over a period of thirty (30) years and which will not be disturbed by a 100 Year Design Storm (defined below) occurring at any time during the 30-year period. The Prudent Line was located as to include all free board required to contain the wave action of the 100 Year Design Storm. It is understood that AMAFCA's maintenance responsibilities extend to the limits of the Prudent Lines and not beyond.

F. Permanent Improvement is defined as a flood control facility which has been analyzed and designed by a competent engineer using acceptable engineering standards and the 100 Year Design Storm criteria, and which is constructed of materials expected to have a design life of 50 years or more before replacement or major rehabilitation is required. Within this Drainage Easement, any Permanent Improvement will, to the extent possible, be constructed of soil cement, concrete, rip rap, or other materials of equivalent durability, stability, and longevity. Rip rap will be covered with an earth layer sufficient to sustain plant growth and discourage rodents. Other materials will be covered, to the extent possible, with a similar earth layer. Structural concrete, if exposed, will be treated to make its color similar to the surrounding earth, either by concrete additives, or by appropriate surface treatment. Texturing of the structural concrete will also be considered. The construction of reinforced concrete channels will be permitted only when other permanent measures have been tried and

have failed, or are deemed unacceptable to AMAFCA for reasons of high maintenance or poor performance.

G. It is understood that AMAFCA's obligations to perform Level Three and Level Four Maintenance and/or to construct Permanent Improvements are subject to availability of funds, and in the case of capital improvements, a favorable vote on a public bond issue, sale of bonds, and approval of expenditures by the AMAFCA Board of Directors.

3. Grant of Drainage Easement; Purpose; Reserved Rights. Grantor grants to AMAFCA and to its successors and assigns, a drainage easement over the Property for the primary purpose of surface storm drainage and gives AMAFCA the right to construct, operate, maintain, reconstruct, temporarily store sediment and perform other functions necessary for drainage and flood control as specified herein (the "Drainage Easement"). Grantor reserves to itself, and to its personal representatives, heirs, successors and assigns, all rights accruing from the ownership of the Property, including the right to engage in or permit or invite others to engage in all uses of and activities at the Property that are not expressly prohibited by or inconsistent with the purpose of the Drainage Easement, as such purposes are defined herein. Without limiting the foregoing, the Grantor will have and expressly reserves the following rights and easements to be exercised at the discretion of the Grantor, except as otherwise provided:

A. The right to grant subservient easements over portions of the Property to the appropriate parties as necessary for underground utilities including but not limited to water, sewer, gas, electricity and cable t.v., subject to prior approval from AMAFCA, such approval not to be unreasonably withheld, and issuance of an encroachment license by AMAFCA;

B. The right to use and maintain, and grant subservient easements to use and maintain, the Property consistent with the purpose of the Drainage Easement and permitted uses within the scope of the Drainage Easement, subject to prior approval from AMAFCA, such approval not to be unreasonably withheld, and issuance of an encroachment license by AMAFCA;

C. The right to establish hiking, biking and equestrian trails, the right to maintain such trails, and the right to grant trail and other path easements, all subject to prior approval from AMAFCA, such approval not to be unreasonably withheld, and issuance of an encroachment license by AMAFCA;

D. The right to dedicate to the City of Albuquerque portions of the Property as rights-of-way for public streets, subject to prior approval from AMAFCA, such approval not to be unreasonably withheld;

E. The right to install and maintain water harvesting devices; and

F. The right to plat lots over this Drainage Easement.

4. Term of Drainage Easement. The Drainage Easement will remain in effect so long as AMAFCA continues to use the Drainage Easement for the designated purpose. Whenever AMAFCA abandons, vacates or ceases to use the Drainage Easement, then ownership of the Drainage Easement will revert to and revest in Grantor, and its successors and assigns, without any action on the part of Grantor, as fully and completely as if the grant of the Drainage Easement had never been executed by Grantor and the Drainage Easement will then become void. Abandonment action will occur by the AMAFCA Board of Directors, conveying the Drainage Easement to Grantor by quitclaim deed.

5. Maintenance Obligations of AMAFCA. Level Three and Level Four Maintenance for the Drainage Easement will be the responsibility of AMAFCA. AMAFCA will bear all costs, responsibilities and liabilities related to such maintenance, except as otherwise stated herein. These obligations to maintain will remain in full force and effect as long as this Drainage Easement exists and may only be assigned to and assumed by a person or entity capable of performing such obligations. Such assignment will not be made without prior approval of the Owners Association, such approval not to be unreasonably withheld. Grantor will have no responsibility whatsoever relating to such maintenance of the Drainage Easement.

6. Easement; Maintenance Obligations of the Owners Association. Grantor grants to the Owners Association an easement for, and the Owners Association will be responsible for,

Level One and Level Two Maintenance for the Drainage Easement. The Owners Association will bear all costs, responsibilities and liabilities related to such maintenance. Should the Owners Association desire to undertake measures outlined under Level Three or Level Four Maintenance, it may do so at its own expense, subject to prior written approval from AMAFCA of both the engineering aspects and the financial ability to finance such measures, such approval not to be unreasonably withheld. During the Class "B" Control Period (as defined in the Declaration of Covenants, Conditions, and Restrictions for High Desert Residential Properties recorded December 22, 1993 in the records of Bernalillo County, New Mexico in Book MS 93-36, pages 1-87), as amended, Grantor will either (i) perform all of the maintenance obligations of the Owners Association under this Drainage Easement or (ii) ensure that the Owners Association has the financial ability to perform all of its maintenance obligations under this Drainage Easement.

7. Default in Maintenance Obligations.

A. Non-Emergency Situation Defaults. If AMAFCA or the Owners Association believes the other has defaulted in its obligations to maintain the Drainage Easement, except in flood emergency situations as set forth in Section 7(B), the "non-defaulting party" will give the "defaulting party" written notice of such default. Within 10 working days of such notice the "defaulting party" will respond, in writing, setting forth its intended action to cure the default. If the intended action

is not satisfactory to the "non-defaulting party", it will appeal to the AMAFCA Board of Directors. If the nature of the default is of a technical nature, either party may, as an intermediate step before appeal to the AMAFCA Board, appeal to the Technical Standards Committee of AMAFCA (the "Technical Standards Committee"). If the decision of the Technical Standards Committee is not satisfactory to either party, either party may appeal to the AMAFCA Board of Directors. If the decision of the AMAFCA Board of Directors is not satisfactory to either party, either party may proceed to arbitration under the provisions of the New Mexico Uniform Arbitration Act, provided that matters within the discretionary authority of the AMAFCA Board of Directors, including, but not limited to the prioritization of repairs or improvements, are not arbitrable, unless the Board's decision is arbitrary or capricious. If a claim of default in maintenance obligations is arbitrated, the prevailing party will be entitled to reasonable attorney fees and costs.

B. Emergency Situation Defaults. During or immediately following a flood emergency, if AMAFCA or the Owners Association believes the other is in default of its maintenance obligations, the "non-defaulting party" has the option of seeking immediate judicial relief in the form of an injunction, or it can unilaterally, without notice, take whatever reasonable steps it believes are necessary to mitigate damage from the emergency situation. Following such mitigation efforts, the party taking such steps may seek reimbursement of its reasonable expenses from

the "defaulting party" through arbitration under the procedures of the New Mexico Uniform Arbitration Act. If such a claim for reimbursement is arbitrated, the prevailing party will be entitled to reasonable attorney fees and costs.

C. Liens. If AMAFCA is awarded monetary compensation (including attorney fees and costs) against the Owners Association through arbitration, AMAFCA may take whatever steps are necessary to enforce and collect such monetary award, including the placing of a lien against the assets of the Owners Association. The Owners Association agrees to enforce the provisions of all documents governing the Owners Association and its members regarding members' financial obligations or assessments to the Owners Association (the "Assessment Rights"), so that sufficient funds and other assets are available to satisfy any arbitration or judicial award. The Owners Association hereby assigns to AMAFCA and grants AMAFCA a security interest in the Assessment Rights. Such assignment will become absolute, and AMAFCA may exercise such Assessment Rights, in the event that the Owners Association (i) has ceased to exist or function or (ii) has filed a voluntary or involuntary petition under any chapter of the Federal Bankruptcy Code.

8. Operation, Maintenance and Inspection:
Procedures and Records.

A. An operation, maintenance and inspection file (the "File") will be created and maintained by AMAFCA, but will be available for review by the Owners Association at any

time. The Owners Association will cooperate with AMAFCA in the creation and maintenance of the File. The File will be the result of the joint efforts of AMAFCA and the Owners Association. The File will include, at a minimum, the following:

- i. copy of this Drainage Easement and any modification;
- ii. copy of any easement documents;
- iii. photographs of the Property's arroyos in their condition contemporaneous with the date of this Drainage Easement, such photographs to be taken by AMAFCA. These photographs will comprise a visual baseline for evaluating appropriateness of planned maintenance measures, and for ensuring the flood-carrying capacity of the arroyos are not diminished;
- iv. operation, maintenance and inspection records, as outlined below;
- v. correspondence; and
- vi. other records deemed appropriate or necessary.

B. Operation records of the Property's arroyos will be kept as follows:

- i. operation records of flood events, that may have any degree of formality, and that may include such records as telephonic reports of rainfall, floods and visual observations, photographs, video recordings, measurements of depth and width of flows, and engineering estimates of flow will be maintained.

ii. Owners Association will notify AMAFCA during or after significant storm events that create a need for Level Two Maintenance or higher, and will provide as much information as possible for purposes of maintaining operating records.

iii. Any engineering analyses regarding flow events will be the responsibility of AMAFCA.

C. Maintenance records of the Property's arroyos will be maintained as follows:

i. Reports of maintenance performed, with an associated estimate of costs, will be maintained, including a breakdown of each level of maintenance (Levels One through Four) performed and an estimate of the cost of each level of maintenance performed.

ii. Both AMAFCA and the Owners Association will provide reports to the AMAFCA file, immediately after maintenance is performed.

iii. Reports will include information on what maintenance was performed, location of maintenance activities, and estimated costs. Photographs and sketches may be added, as appropriate.

D. Inspection records of the Property's arroyos will be maintained as follows:

i. The Owners Association will cause the arroyos to be inspected at least once annually, during the period October 1 to March 31, and after each significant storm event

which creates a need for Level Two Maintenance or higher. The primary purposes of the inspection are to identify problems needing correction and to serve as a work order for maintenance.

ii. Inspections will be performed by a person or team with sufficient knowledge and experience to determine when and what maintenance is required, which team will include a registered professional engineer competent in hydrology and hydraulics selected by the Owners Association. AMAFCA will, to the extent possible, participate in the inspection, at mutually agreed upon times.

iii. Reports of each inspection will be made on a form developed by AMAFCA, in consultation with the Owners Association.

iv. Inspection personnel, including AMAFCA personnel, will be permitted to walk across (on foot only) the private property adjacent to the Property in order to gain access to the Property for inspections. Provided, however, that such crossing will be done in a manner to limit and minimize any damage to the private property and will not be excessive.

9. Liability and Responsibility; Insurance; Contingency Reserve.

A. Each party will be responsible and liable for its actions, according to New Mexico state law.

B. Owners Association will carry general liability insurance in the amount of not less than \$500,000,

naming AMAFCA as additional named insured and with a copy of the policy provided to AMAFCA annually, or upon each renewal.

C. Owners Association will, within ten years of the date of this Drainage Easement, establish a contingency reserve (the "Reserve"), dedicated solely to extraordinary drainage maintenance and repair.

i. The Reserve will be funded to an amount equal to the costs incurred for Levels One and Two Maintenance, for the five years during the first ten years after the date of this Drainage Easement in which such costs were the highest, or \$50,000, whichever is greater. The Reserve will be the single reserve that will apply to this Drainage Easement and the other dendritic arroyos drainage easements located or to be located in the High Desert development, including those dendritic arroyos drainage easements set forth in the Modification to Easement to AMAFCA and Easement to Owners Association in Proposed Unit 1, Highlands Subdivision (A Portion of Highlands Dendritic Arroyos) recorded March 8, 1995, in book 95-6, pages 2335-2370, as document number 95023421, records of Bernalillo County, New Mexico, the Easement to AMAFCA and Easement to Owners Association in Tracts 15B and 15C at High Desert, Proposed Unit 2 and 3 Highlands Subdivision (a Portion of Highlands Dendritic Arroyos) recorded June 20, 1995, in Book 95-14, pages 6998-7042, as document number 95060707, records of Bernalillo County, New Mexico, and the Easement to AMAFCA and Easement to Owners Association in Tract 15D at High Desert, in the Highlands

Subdivision, recorded July 1, 1996 in Book 96-18, pages 3732-3779, as document number 96073621, records of Bernalillo County, New Mexico.

ii. The Reserve will be maintained in a financial institution selected by the Owners Association.

iii. The Reserve will be used by the Owners Association solely for (i) Level One or Level Two Maintenance types of activities, following Level Three or Level Four Maintenance activities by AMAFCA, (ii) extraordinary amounts of Level One or Level Two Maintenance activities at any time when mutually agreed upon by AMAFCA and the Owners Association, or (iii) Level Three or Level Four Maintenance activities performed by the Owners Association when mutually agreed upon by AMAFCA and the Owners Association. The Reserve may not be used for other purposes without the prior written approval of AMAFCA. If the Reserve is depleted, it will be restored within an amount of time proportional to the amount of depletion up to a five year period (e.g., 20% depletion replaced in one year; 100% depletion replaced in five years).

iv. The amount of the reserve may be modified after the tenth year by mutual agreement, based upon accumulated experience.

10. Other Easements. AMAFCA accepts the Drainage Easement subject to other easements of record to which the Property is subject.

11. Recordation. Grantor will timely record this Drainage Easement in the real estate records of Bernalillo County, New Mexico and any other place of recordation AMAFCA or the Owners Association deems is necessary to preserve its rights.

12. Notice. Any notice required under this Drainage Easement will be sent by first class mail, postage prepaid:

If to Grantor: High Desert Investment Corporation
13000 Academy Road, N.E.
Albuquerque, New Mexico 87111

If to AMAFCA: Albuquerque Metropolitan Arroyo Flood Control Authority
2600 Prospect Avenue, N.E.
Albuquerque, New Mexico 87107

If to Owners Association: High Desert Residential Owners Association, Inc.
13000 Academy Road, N.E.
Albuquerque, New Mexico 87111

13. Binding Effect. This Drainage Easement will inure to the benefit of and bind the heirs, devisees, personal representative, mortgagees, lessees, tenants, successors and assigns of Grantor, AMAFCA and the Owners Association and will continue as a servitude running in perpetuity with the Property.

14. Governing Law. This Drainage Easement will be governed by and interpreted in accordance with the laws of the State of New Mexico.

15. Amendment. This Drainage Easement may be amended or modified by the mutual agreement in writing of Grantor, AMAFCA and the Owners Association or their successors or assigns. Such

writing will be filed for public record with reference to this Drainage Easement and previous amendments thereto, if any.

16. Liberal Construction and Interpretation. This Drainage Easement will be liberally construed. If any provision of this Drainage Easement is found to be ambiguous, an interpretation consistent with the purpose of this Drainage Easement that would render the provision valid will be favored over an interpretation that would render it invalid. If any provision of this Drainage Easement is determined by a court of competent jurisdiction to be void, invalid, illegal or unenforceable, that portion will be severed from this Drainage Easement and the remaining parts will remain in full force as though the invalid, illegal, or unenforceable portion had never been a part of this Drainage Easement.

17. Integration. This Drainage Easement contains or expressly incorporates by reference the entire agreement of the parties with respect to the matters contemplated by this Drainage Easement and supersedes all prior negotiations.

18. No Forfeiture. Nothing contained herein will result in a forfeiture or reversion of Grantor's title in any respect.

19. No Rights Granted or Conferred. This Drainage Easement is not intended to and does not grant or confer rights to any utilities or the general public for unauthorized use except those rights specifically granted and conferred herein.

20. Flood Control Standards; Future Easements. It is understood and the parties agree that:

A. the community standard in Albuquerque, New Mexico for flood protection is the 100 Year Design Storm as defined in the City of Albuquerque and Bernalillo County Drainage Ordinances as of the date of this Easement and that damage resulting from a storm exceeding the 100 Year Design Storm will not be attributed to any party to this Drainage Easement, nor will any such party be liable for such damage;

B. this Drainage Easement granted is based on the Prudent Line which is defined by reference to the erosion caused by a single 100 Year Design Storm and 30 years of average annual flow. All parties will work to preserve and protect the ability of the easement area to convey the 100 Year Design Storm; and

C. Permanent Improvements will be designed and built to withstand the 100 Year Design Storm, unless otherwise approved by AMAFCA.

21. Resolution of Disputes and Appeals.

A. Matters of a technical nature may be appealed by any party to the Technical Standards Committee, under provisions of AMAFCA Resolution 1980-15.

B. Except as otherwise provided herein, non-technical decisions made by the AMAFCA staff may be appealed to the AMAFCA Board of Directors. If satisfactory resolution is not achieved, any party will refer the matter to arbitration under

the provisions of the New Mexico Uniform Arbitration Act, except as otherwise provided herein.

C. The sole remedy for all disputes arising under this Drainage Easement, with the exception of injunctive relief as set forth in Section 7(B), will be arbitration under the provisions of the New Mexico Uniform Arbitration Act.

22. Miscellaneous. The headings used in this Drainage Easement are for convenience only and will be disregarded in interpreting the substantive provisions of this Drainage Easement. Time is of the essence of each term of this Drainage Easement.

Dated August 1, 1996, 1996.

HIGH DESERT RESIDENTIAL OWNERS ASSOCIATION, INC., a New Mexico nonprofit corporation

By Pamela G. Scanlon
Its PRESIDENT

ALBUQUERQUE METROPOLITAN ARROYO FLOOD CONTROL AUTHORITY

By Larry A. Alane
Its Executive Engineer

HIGH DESERT INVESTMENT CORPORATION, a New Mexico profit corporation

By D. J. Hultquist
Its President

By Morgan Sparks
Its CHAIRMAN

STATE OF NEW MEXICO)
) ss.
 COUNTY OF BERNALILLO)

This instrument was acknowledged before me on _____
7-25, 1996, by PAMELA G. SCANLON, PRESIDENT
 of High Desert Residential Owners Association, Inc., a New
 Mexico nonprofit corporation, on behalf of the corporation.

Laudy Miles
 Notary Public

My commission expires:

7-14-98

STATE OF NEW MEXICO)
) ss.
 COUNTY OF BERNALILLO)

This instrument was acknowledged before me on _____
August 1, 1996, by Larry A. Blair, Executive
 Engineer of the Albuquerque Metropolitan Arroyo Flood Control
 Authority, a political subdivision of the State of New Mexico, on
 behalf of the subdivision.

Martin Ebert
 Notary Public

My commission expires:

July 8, 2000

0634

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on _____
7-25, 1996, by DOUGLAS H. COLLISTER, PRESIDENT
of High Desert Investment Corporation, a New Mexico corporation,
on behalf of the corporation.

Linda J. Miles
Notary Public

My commission expires:

7-14-98

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on _____
7-25, 1996, by MORGAN SPARKS, CHAIRMAN
of High Desert Investment Corporation, a New Mexico corporation,
on behalf of the corporation.

Linda J. Miles
Notary Public

My commission expires:

7-14-98

tract14\cpp\legaldoc\amafca.14c
07/24/96

CITY OF ALBUQUERQUE



January 31, 2013

David Soule, P.E.
Rio Grande Engineering
P.O. Box 93924
Albuquerque, NM 87199

**Re: 13408 Quaking Aspen, Grading and Drainage Plan
Engineer's Stamp Dated 01-10-13 (E-23/D003C1)**

Dear Mr. Soule,

PO Box 1293

The Hydrology section appreciates your recent submission of the grading and drainage plan for this project to update our files. We will add the approved plan to the drainage file for future reference.

Albuquerque

If you have any questions, you can contact me at 924-3695.

NM 87103

Sincerely,

Shahab Biazar, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

www.cabq.gov

C: email

**DRAINAGE REPORT
FOR
UNIT 2 OF DESERT HIGHLANDS AT HIGH DESERT
(HIGH DESERT - TRACT 15D-1B-2)**

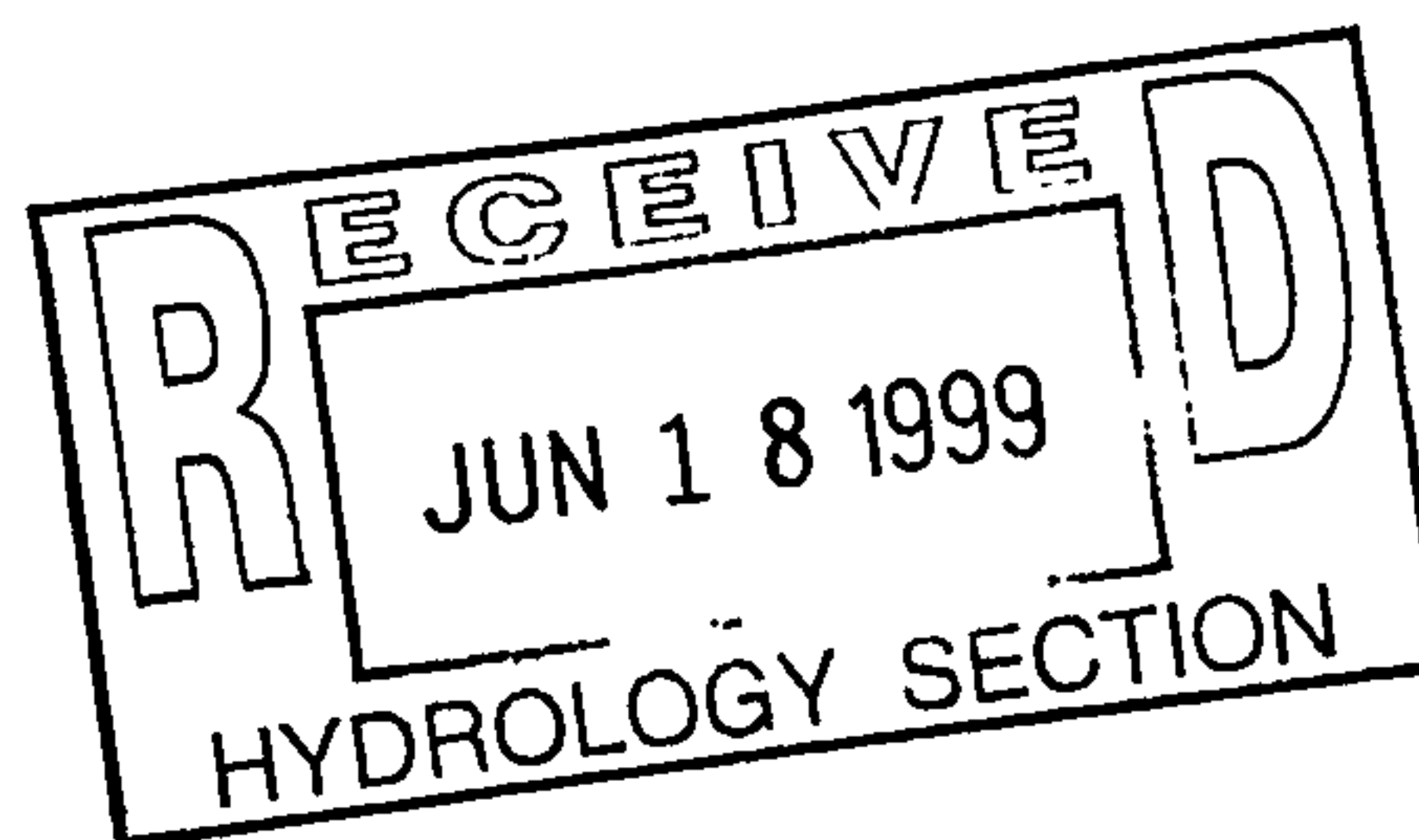
June 18, 1999

PREPARED BY:

**BOHANNAN HUSTON, INC.
COURTYARD I
7500 JEFFERSON STREET NE
ALBUQUERQUE, NM 87109**

PREPARED FOR:

**HIGH DESERT INVESTMENT CORPORATION
13000 ACADEMY ROAD NE
ALBUQUERQUE, NM. 87111**



PREPARED BY:

Yolanda Padilla 6/18/99
Yolanda Padilla, E.I. Date

UNDER THE SUPERVISION OF:

Kevin Patton 6/18/99
Kevin Patton P.E. Date

A circular seal for a Registered Professional Engineer. The outer ring contains the text "REGISTERED PROFESSIONAL ENGINEER". The inner circle contains the name "KEVIN G. PATTON", the state "NEW MEXICO", and the license number "13685".

I. PURPOSE

The purpose of this report is to provide site-specific drainage analysis for existing and proposed conditions in the residential development, referred to as Unit 2 of the Desert Highlands at High Desert (Tract 15D-1B-2). This plan is prepared and submitted to support rough grading, infrastructure design, preliminary and final plat approvals.


This report will reference the following City of Albuquerque and the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) approved studies prepared for the High Desert Development: 1) the High Desert Drainage Management Master Plan, dated December 1993; 2) the High Desert - Phase I Prudent Line Analysis, dated May 1994; 3) the High Desert - Phase II Prudent Line Analysis, date August 1995; 4) the High Desert Subdivision South Pino Tributary Storm Drain Design Analysis Report, dated May 1997; Drainage Report for High Desert - Tract 15D-1A Unit 4 of the Highlands, dated December 19, 1997 and revised January 16, 1998; and High Desert Subdivision LOMR-Forms and Floodplain Maps, date January 1999.

The High Desert Drainage Management Master Plan, dated December 1993, was prepared to support future drainage plans submitted for the development of individual land parcels within High Desert and to provide design guidance for the design of primary drainage infrastructure to be constructed by High Desert in advance of or simultaneously with individual parcel development. In addition, it provides fully developed flow rates for basins that influence the Highlands Subdivision in the High Desert Development.

The High Desert - Phase I Prudent Line Analysis, dated May 1994, was prepared to establish the prudent lines for the proposed High Desert Development south of the South Pino Tributary Arroyo. The report establishes prudent lines from fully developed flow rates of the basins influencing the Highlands Subdivision in the High Desert Development.

The High Desert - Phase II Prudent Line Analysis, dated August 1995, is a follow-up study to the High Desert - Phase I Prudent Line Analysis, dated May 1994. Phase II establishes prudent

lines for the South Pino Tributary Arroyo downstream of the South Pino Diversion to the North Bear Tributary. The report establishes prudent lines from fully developed flow rates of the basins influencing the Highlands Subdivision in the High Desert Development.



The High Desert Subdivision South Pino Tributary Storm Drain Design Analysis Report, dated May 1997, was prepared to establish a conveyance system for the South Pino Tributary Arroyo from Imperata Street to Tramway Boulevard and to determine the required land area and potential grading for the desiltation pond immediately upstream of Imperata Street. The infrastructure reflected in the above report has been completed and approved under COA Project #571282.

II. PRUDENT LINES

Please refer to the High Desert - Phase I Prudent Line Analysis, dated May 1994 and High Desert - Phase II Prudent Line Analysis, dated August 1995. The concept of the "prudent line" was established by AMAFCA. The prudent line represents the minimum setback necessary to provide protection for development from an active arroyo. The prudent line concept encompasses not only the flood plain necessary to pass the 100-year storm, but also represents the potential for natural arroyos to move laterally and degrade over time. The long-term effects are based on potential erosion associated with "representative" storm events occurring for a 30-year period.

The Grading and Drainage Plan enclosed contains the prudent lines calculated in the above-mentioned report. The prudent lines within Tract 15D-1B-2 were granted as drainage easements to AMAFCA on July 1, 1996, under Document No. 96073621, Book 96-18, Pages 3732-3779. The building envelopes in Tract 15D-1B-2 are not located within the prudent lines.

III. METHODOLOGIES

Please refer to the above referenced reports for the specific methodologies used in preparing those individual reports or plans.

Site conditions are analyzed for a 100-year, 6-hour storm events in accordance with the City of Albuquerque Drainage Ordinance and the Development Process Manual (DPM), Volume 2, Design Criteria, Section 22.2, Hydrology for the City of Albuquerque, January 1993. The modified rational method contained within this edition of the Development Process Manual (DPM) was utilized to determine the hydrologic discharges and volumes generated by this development.

The site, as described in the 'Site Location and Characteristics' section below, is approximately 50.35 acres. Part A of the DPM, Section 22.2, which provides a simplified procedure for projects with sub-basins smaller than 40 acres, was used. Although some of the basins exceed 40 acres, we believe the simplified procedure provided in the City of Albuquerque Development Processing Manual will generate a more conservative flow rate, which will be compared to those calculated in the Master Plan.

The report will reference the High Desert Drainage Management Mater Plan, dated December 1993 (hereafter referred to as the HDDMMP), which was prepared for High Desert Investment Corporation and approved by the City of Albuquerque. That report was prepared to support future drainage plans submitted for the development of individual land parcels within High Desert, and to provide design guidance for the installation of major drainage infrastructure to be constructed in advance of, or simultaneously with individual parcel development. In addition, it provides fully developed flow rates for basins within the High Desert Development.

IV. SUMMARY OF THE RELATED PLATTING AND EASEMENTS

Please refer to the proposed Bulk Land Plat enclosed in the Exhibit section of this report.

The proposed Bulk Land Plat will divide Tract 15D-1B into Tract 15D-1B1 and Tract 15D-1B2. This will support future development of Tract 15D-1B2, which will be divided into 40 lots. High Desert Investment Corporation will provide a public drainage easement to the City of Albuquerque addressing cross-lot drainage. This easement is identical to the public drainage easement that was granted to the City with the past developments of the Highlands at High Desert. As mentioned above, the prudent lines already exist as drainage easements granted to AMAFCA and the Residential Owners Association.

An existing recorded maintenance agreement; associated with the existing AMAFCA easements mentioned above, defines the different responsibilities required by AMAFCA and the Residential Owners Association. The final plat will clearly identify all maintenance responsibilities for all arroyo and tributary easements. AMAFCA has already been provided with the necessary arroyo and tributary easements for this and future projects in the Highlands at High Desert.

V. SITE LOCATION AND CHARACTERISTICS

For location of the site, please refer to the vicinity map on the grading and drainage plan enclosed with this report.

The site is located east of proposed Imperata Street, north of Unit 1 of the Desert Highlands Development, south of future development Tract 15D-1B-1, and west of the Cibola National Forest. The site is currently zoned SU-2/HD-R-1 and is approximately 50.35 acres in size. Access to the site will be provided from Quaking Aspen Place that was constructed in Phase 1.

Vegetation consists primarily of prairie grasses and a few juniper trees. Slopes in the project site range from 2% to 15%, with the majority of the project sloping at 2% to 8%. The Soil

Conservation Service has classified the soils on this site as Embudo-Tijeras complex, Embudo gravely fine sandy loam and Tijeras gravely fine sandy loam, all of which correspond to a common hydrological soil group classification B.



VI. EXISTING HYDROLOGIC AND SITE DRAINAGE CONDITIONS

Please refer to the High Desert - Phase I & II Prudent Line Analysis, dated May 1994 and August 1995, respectively, and the Existing Drainage Conditions Map enclosed with this report.


The above referenced reports support the development of the Highlands at High Desert. The above reports also provide existing and developed flow rates within the prudent lines from the surrounding area. As indicated on the Existing Drainage Conditions Map within the report, the basins north of the site are relatively large due to the existing South Pino Tributary Arroyo Training Dike diverting upland through this tract. This Training Dike was built in the mid 1980's and revised in 1995 to prevent the possibility of flows diverting to the North Bear Tributary.

The existing flow rates for the area within and around Tract 15D-1B will vary due to the ongoing construction of individual lots within Unit 1 of Desert Highlands and Units 3 of the Highlands. Thus, this report will focus on the fully developed conditions, and how it will affect the proposed development within Tract 15D-1B-2. The Existing Drainage Conditions Map enclosed provides the reader with an idea of what has been platted outside of this proposed subdivision.

A. FEMA Floodplain

Please refer to the High Desert - Phase I & II Prudent Line Analysis, dated May 1994 and August 1995, respectively. The prudent lines established in the above referenced reports define the boundaries of the drainage easements that exist in High Desert - Tract 15D-1B.

Please reference the Preliminary Plat and the Bulk Land Plat located in the Exhibit section of this report for location information.



Bohannon-Huston Inc. prepared a Letter of Map Revision (LOMR) to remove, revise and add floodplains within High Desert submitted January 1999. The portion of the LOMR that will affect this development includes the North Bear Tributary and the South Pino Tributary. The South Pino Tributary Training Dike mentioned above removed the North Bear Tributary FEMA floodplain within the High Desert Development from east of Tramway Boulevard to the existing dike. The South Pino Tributary Desiltation Pond removed the FEMA floodplain that extends to Tramway Boulevard. The Training Dike also created a FEMA floodplain between the South Pino Tributary Pond (Tract 15D-1A-1) and the Dike. Although, the floodplain is contained within the existing prudent lines mentioned above.

Flood insurance may be required on lots 29-40, 44, 48, & 68 as a result of the LOMR. This LOMR to FEMA was submitted January 1999. See Exhibit 6 to understand which flood plains will be added or removed.

VII. DEVELOPED HYDROLOGICAL AND HYDRAULIC CONDITIONS

Please refer to the High Desert Drainage Management Master Plan, dated December 1993 and the Grading and Drainage plan enclosed with this report.

A. Cross-Lot Drainage and Building Envelopes

The site proposes to preserve the natural terrain in every way possible. The site contains 40 lots on approximately 50.35 acres. Each lot contains a maximum building envelope of 12,000 square feet. The site will utilize cross-lot drainage, which will require an easement within each lot, but outside the proposed building envelope in order to legally permit storm water to maintain its natural course across public roadway(s) and through

private property. Property owners are required by covenant agreements to build only within their building envelope and to utilize drainage concepts (i.e. water harvesting) that will not produce concentrated flows outside of their envelope limits. Building or non-native landscaping will not be permitted outside building envelopes.

Each lot owner is required to submit a grading and drainage plan, stamped by a professional engineer, to the High Desert New Construction Committee. Prior to final acceptance of the construction of each individual lot by the High Desert New Construction Committee, the lot owner is required to provide the committee with a drainage plan certified by a professional engineer. At that time a pad elevation will be provided by the lot owner when the home is designed. Flows will be allowed to maintain its natural course across public roadway and through private property. After The Highlands is fully developed, High Desert Investment Corporation will provide the City with one comprehensive grading and drainage plan reflecting the individual lot grading.

The above referenced report (HDDMMP) has projected storm water runoff values for fully developed conditions within the High Desert Development in order to properly size downstream storm drainage structures. This report compares the projected land treatment percentages assumed in the above report with a more accurate estimate from our enclosed preliminary plat layout. The following results indicate approximately the same values with only negligible differences:

	Land Treatment Types (%)				Peak Discharge (cfs/acre)
	A	B	C	D	
HDDMMP 1993	75.85	10.49	6.01	7.65	2.32
Tract 15D-1B (Unit 2) *	94.13	1.28	0.00	4.59	2.34

In determining the land treatment percentages shown above, HDDMMP assumed 1 du/acre (Tract 15D-1B has 1.26 du/acre) while this report calculated an average building envelope of 12,000 square feet (.2755 AC) within an average lot size of 1.16 acres (50,617 SF). This report assumes that on average, at least 27% of the area within the

* I believe that this is a conservative estimate due to the fact that the estimate did not take into account that each lot is required to manage storm water flows, using minor detention and water harvesting techniques, within this building envelope, thus reducing peak flow rates indicated above.

building envelope will be landscaped (Land Treatment Type B) and 73% (or 8,760 SF) will be impervious (Land Treatment Type D). According to the subdivision guidelines, any portion (of the assumed 27%) of landscaping within the envelope and located outside of any privacy walls must be native landscaping.

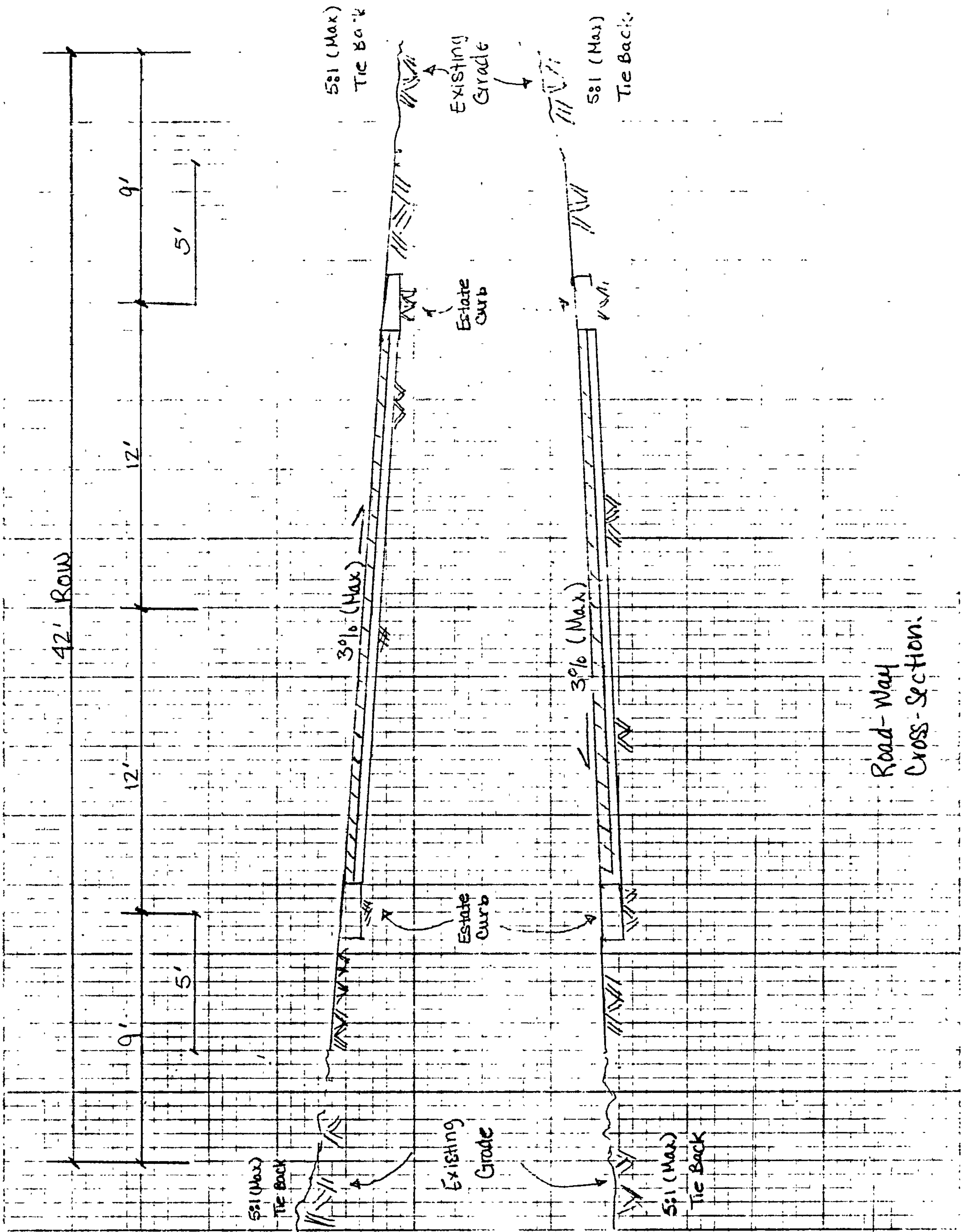
B. The Highlands Ponds and South Pino Storm Drain

The proposed site (Tract 15D-1B-2) conveys flows to a detention/desilting pond, which ushers storm water runoff from the Highland's arroyos into the existing South Pino Storm Drain which was built and accepted under COA Project #571282. The South Pino Storm Drain begins at the South Pino Tributary Pond (Tract 15D-1A-1) located at the northeast corner of Imperata St. and Pino Canyon Place and heads west along the south side of Blue Grama Road until it connects with the Tramway Boulevard storm drain system. The existing South Pino Storm Drain is a public storm drain, owned and maintained by the City of Albuquerque.

As a part of Unit 2 of Desert Highlands, the developer will construct a culvert within the AMAFCA easement under SnakeDance Court. After analysis was completed, it was determine that a 36" circular RCP culvert will be used. See Appendix E for this analysis. The City of Albuquerque will be responsible for the maintenance of this culvert, as well as the pond and drop structures tied to the pond located within Tract 15D-1A-1. As requested with the development of Unit 1 of Desert Highlands, the final plat will indicate where AMAFCA responsibilities end and the City of Albuquerque's begins. The recorded plat for Unit 1 of Desert Highlands provides information regarding the current maintenance responsibilities of the City and the High Desert Owners Association within the ponding areas.

VIII. CONCLUSION

The primary goal of this drainage plan for High Desert - Tract 15D-1B-2, is to provide sound and innovative drainage management schemes that permit preservation of the natural terrain with the least possible impact. The utilization of drainage schemes outlined in this report accomplishes this goal in a safe and adequate manner. We recommend that this plan be approved as requested.



Bohannon & Huston



PROJECT NAME _____ SHEET _____ OF _____

PROJECT NO. _____ BY _____ DATE _____

SUBJECT _____ CH'D _____ DATE _____

B-1

ENGINEERS PLANNERS PHOTOGRAMMETRISTS
SURVEYORS SOFTWARE DEVELOPERS

UNIT 2 @ HIGH DESERT
HYRDOLOGICAL VOLUMETRIC & DISCHARGE DATA (EXISTING)

BASIN NO.	BASIN I.D	DISCHARGES TO	AREA (ac)	% LAND TREATMENT				RUNOFF (ac-ft)		DISCHARGE (cfs)	
				A	B	C	D	10 YR	100 YR	10 YR	100YR
33	(SPT-4)	Basin 35	81.28	90.00%	10.00%	0.00%	0.00%	2.02	5.61	76.27	183.76
35	(SPT-6A)	Basin 37	23.68	90.00%	10.00%	0.00%	0.00%	0.59	1.63	22.22	53.54
36	(SPT-6B)	Basin 37	89.60	90.00%	10.00%	0.00%	0.00%	2.23	6.18	84.08	202.57
37A	(SPT-7A2)	96" SD	20.81	90.00%	10.00%	0.00%	0.00%	0.52	1.44	19.53	47.05
37B	(SPT-7A1)	96" SD	17.59	90.00%	10.00%	0.00%	0.00%	0.44	1.21	16.51	39.77
TOTAL			232.96					5.79	16.07	218.60	526.68

UNIT 2 @ HIGH DESERT
HYRDOLOGICAL VOLUMETRIC & DISCHARGE DATA (DEVELOPED)
(HIGH DESERT DRAINAGE MANAGEMENT MASTER PLAN - 12/93)

BASIN NO.	BASIN I.D	DISCHARGES TO	AREA (ac)	% LAND TREATMENT				RUNOFF (ac-ft)		DISCHARGE (cfs)	
				A	B	C	D	10 YR	100 YR	10 YR	100YR
33	(SPT-4)	Basin 35	81.28	89.25%	7.60%	2.30%	0.85%	-	-	-	147.00
35	(SPT-6A)	Basin 37	23.68	72.76%	5.74%	8.00%	13.50%	-	-	-	71.00
36	(SPT-6B)	Basin 37	89.60	64.93%	18.86%	8.00%	8.21%	-	-	-	213.00
37A	(SPT-7A2)	96" SD	20.81	74.85%	0.00%	8.00%	17.15%	-	-	-	59.06
37B	(SPT-7A1)	96" SD	17.59	74.85%	0.00%	8.00%	17.15%	-	-	-	49.92
TOTAL			232.96					-	-	-	539.99

*All data in this table was taken from the High Desert Drainage Management Master Plan - 12/93)

UNIT 2 @ HIGH DESERT
HYRDOLOGICAL VOLUMETRIC & DISCHARGE DATA (DEVELOPED)
(CALCULATED)

BASIN NO.	BASIN I.D	DISCHARGES TO	AREA (ac)	% LAND TREATMENT				RUNOFF (ac-ft)		DISCHARGE (cfs)	
				A	B	C	D	10 YR	100 YR	10 YR	100YR
33	(SPT-4)	Basin 35	81.28	99.15%	0.23%	0.00%	0.62%	1.96	5.50	73.05	179.52
35A	(SPT-6A)	Basin 37	10.44	82.35%	4.28%	0.00%	13.38%	0.41	0.92	13.20	27.48
35B	(SPT-6A)	Basin 37	5.38	71.96%	3.46%	0.00%	24.59%	0.28	0.57	8.39	15.99
35C	(SPT-6A)	Basin 37	7.86	78.35%	3.79%	0.00%	17.87%	0.35	0.75	10.86	21.75
36	(SPT-6B)	Basin 37	89.60	96.93%	0.83%	0.00%	2.24%	2.34	6.30	84.75	202.78
37A	(SPT-7A2)	S. Pino Trib. Pond	20.81	91.39%	2.32%	0.00%	6.28%	0.65	1.60	22.11	49.92
37B	(SPT-7A1)	S. Pino Trib. Pond	17.59	80.72%	3.59%	0.00%	15.69%	0.74	1.61	23.26	47.46
TOTAL			232.96					6.74	17.24	235.62	544.89

LOT #	LOT AREA		BUILDING ENVELOPE AREA		ENVELOPE TO LOT (%)
	(ACRES)	(SF)	(ACRES)	(SF)	
29	1.17	50965.20	0.2755	12000.00	23.55%
30	0.87	37897.20	0.2755	12000.00	31.66%
31	1.32	57499.20	0.2755	12000.00	20.87%
32	1.12	48787.20	0.2755	12000.00	24.60%
33	1.04	45302.40	0.2755	12000.00	26.49%
34	1.19	51836.40	0.2755	12000.00	23.15%
35	1.05	45738.00	0.2755	12000.00	26.24%
36	1.00	43560.00	0.2755	12000.00	27.55%
37	0.92	40075.20	0.2755	12000.00	29.94%
38	0.93	40510.80	0.2755	12000.00	29.62%
39	1.56	67953.60	0.2755	12000.00	17.66%
40	3.17	138085.20	0.2755	12000.00	8.69%
41	0.97	42253.20	0.2755	12000.00	28.40%
42	0.95	41382.00	0.2755	12000.00	29.00%
43	1.05	45738.00	0.2755	12000.00	26.24%
44	1.90	82764.00	0.2755	12000.00	14.50%
45	1.50	65340.00	0.2755	12000.00	18.37%
46	2.39	104108.40	0.2755	12000.00	11.53%
47	0.96	41817.60	0.2755	12000.00	28.70%
48	1.70	74052.00	0.2755	12000.00	16.20%
49	1.35	58806.00	0.2755	12000.00	20.41%
50	1.69	73616.40	0.2755	12000.00	16.30%
51	1.38	60112.80	0.2755	12000.00	19.96%
52	1.11	48351.60	0.2755	12000.00	24.82%
53	1.06	46173.60	0.2755	12000.00	25.99%
54	0.94	40946.40	0.2755	12000.00	29.31%
55	0.76	33105.60	0.2755	12000.00	36.25%
56	0.69	30056.40	0.2755	12000.00	39.92%
57	0.78	33976.80	0.2755	12000.00	35.32%
58	0.76	33105.60	0.2755	12000.00	36.25%
59	0.78	33976.80	0.2755	12000.00	35.32%
60	0.83	36154.80	0.2755	12000.00	33.19%
61	0.99	43124.40	0.2755	12000.00	27.83%
62	1.69	73616.40	0.2755	12000.00	16.30%
63	1.05	45738.00	0.2755	12000.00	26.24%
64	0.81	35283.60	0.2755	12000.00	34.01%
65	0.82	35719.20	0.2755	12000.00	33.60%
66	0.83	36154.80	0.2755	12000.00	33.19%
67	0.89	38768.40	0.2755	12000.00	30.95%
68	0.87	37897.20	0.2755	12000.00	31.66%

AVERAGES 1.17 51008.76 0.2755 12000.00 26.24%

Note: The lot and building envelope areas are approximate.

D-1

**UNIT 2 @ HIGH DESERT
DEVELOPED CONDITIONS FOR EACH LOT**

LOT NO.	LOT AREA (AC)	% LAND TREATMENT*				RUNOFF (AC-FT)		DISCHARGE (CFS)	
		A	B	C	D	10 YR	100 YR	10 YR	100YR
29	1.17	76.45%	6.36%	0.00%	17.19%	0.05	0.11	1.6	3.2
30	0.87	68.33%	8.55%	0.00%	23.12%	0.05	0.09	1.3	2.6
31	1.32	79.13%	5.64%	0.00%	15.24%	0.06	0.12	1.7	3.6
32	1.12	75.40%	6.64%	0.00%	17.96%	0.05	0.11	1.6	3.1
33	1.04	73.51%	7.15%	0.00%	19.34%	0.05	0.10	1.5	3.0
34	1.19	76.85%	6.25%	0.00%	16.90%	0.05	0.11	1.6	3.3
35	1.05	73.76%	7.08%	0.00%	19.15%	0.05	0.10	1.5	3.0
36	1.00	72.45%	7.44%	0.00%	20.11%	0.05	0.10	1.5	2.9
37	0.92	70.05%	8.09%	0.00%	21.86%	0.05	0.09	1.4	2.7
38	0.93	70.38%	8.00%	0.00%	21.63%	0.05	0.09	1.4	2.7
39	1.56	82.34%	4.77%	0.00%	12.89%	0.06	0.14	2.0	4.1
40	3.17	91.31%	2.35%	0.00%	6.34%	0.10	0.24	3.4	7.6
41	0.97	71.60%	7.67%	0.00%	20.73%	0.05	0.10	1.4	2.8
42	0.95	71.00%	7.83%	0.00%	21.17%	0.05	0.10	1.4	2.8
43	1.05	73.76%	7.08%	0.00%	19.15%	0.05	0.10	1.5	3.0
44	1.90	85.50%	3.92%	0.00%	10.59%	0.07	0.16	2.3	4.8
45	1.50	81.63%	4.96%	0.00%	13.41%	0.06	0.13	1.9	4.0
46	2.39	88.47%	3.11%	0.00%	8.41%	0.08	0.19	2.7	5.9
47	0.96	71.30%	7.75%	0.00%	20.95%	0.05	0.10	1.4	2.8
48	1.70	83.79%	4.38%	0.00%	11.83%	0.06	0.15	2.1	4.4
49	1.35	79.59%	5.51%	0.00%	14.90%	0.06	0.12	1.8	3.6
50	1.69	83.70%	4.40%	0.00%	11.90%	0.06	0.15	2.1	4.4
51	1.38	80.04%	5.39%	0.00%	14.57%	0.06	0.12	1.8	3.7
52	1.11	75.18%	6.70%	0.00%	18.12%	0.05	0.11	1.6	3.1
53	1.06	74.01%	7.02%	0.00%	18.97%	0.05	0.10	1.5	3.0
54	0.94	70.69%	7.91%	0.00%	21.40%	0.05	0.10	1.4	2.7
55	0.76	63.75%	9.79%	0.00%	26.46%	0.04	0.08	1.3	2.3
56	0.69	60.07%	10.78%	0.00%	29.15%	0.04	0.08	1.2	2.2
57	0.78	64.68%	9.54%	0.00%	25.78%	0.04	0.08	1.3	2.4
58	0.76	63.75%	9.79%	0.00%	26.46%	0.04	0.08	1.3	2.3
59	0.78	64.68%	9.54%	0.00%	25.78%	0.04	0.08	1.3	2.4
60	0.83	66.81%	8.96%	0.00%	24.23%	0.04	0.09	1.3	2.5
61	0.99	72.17%	7.51%	0.00%	20.31%	0.05	0.10	1.5	2.8
62	1.69	83.70%	4.40%	0.00%	11.90%	0.06	0.15	2.1	4.4
63	1.05	73.76%	7.08%	0.00%	19.15%	0.05	0.10	1.5	3.0
64	0.81	65.99%	9.18%	0.00%	24.83%	0.04	0.09	1.3	2.4
65	0.82	66.40%	9.07%	0.00%	24.53%	0.04	0.09	1.3	2.5
66	0.83	66.81%	8.96%	0.00%	24.23%	0.04	0.09	1.3	2.5
67	0.89	69.04%	8.36%	0.00%	22.60%	0.05	0.09	1.4	2.6
68	0.87	68.33%	8.55%	0.00%	23.12%	0.05	0.09	1.3	2.6
TOTAL						2.08	4.32	64.5	129.5

D-2

SnakeDance Culvert

CULVERT RATING TABLE

36. INCH DIAMETER PIPE

N = 0.01300 INCREMENT = 2.00 SLOPE = 0.03610

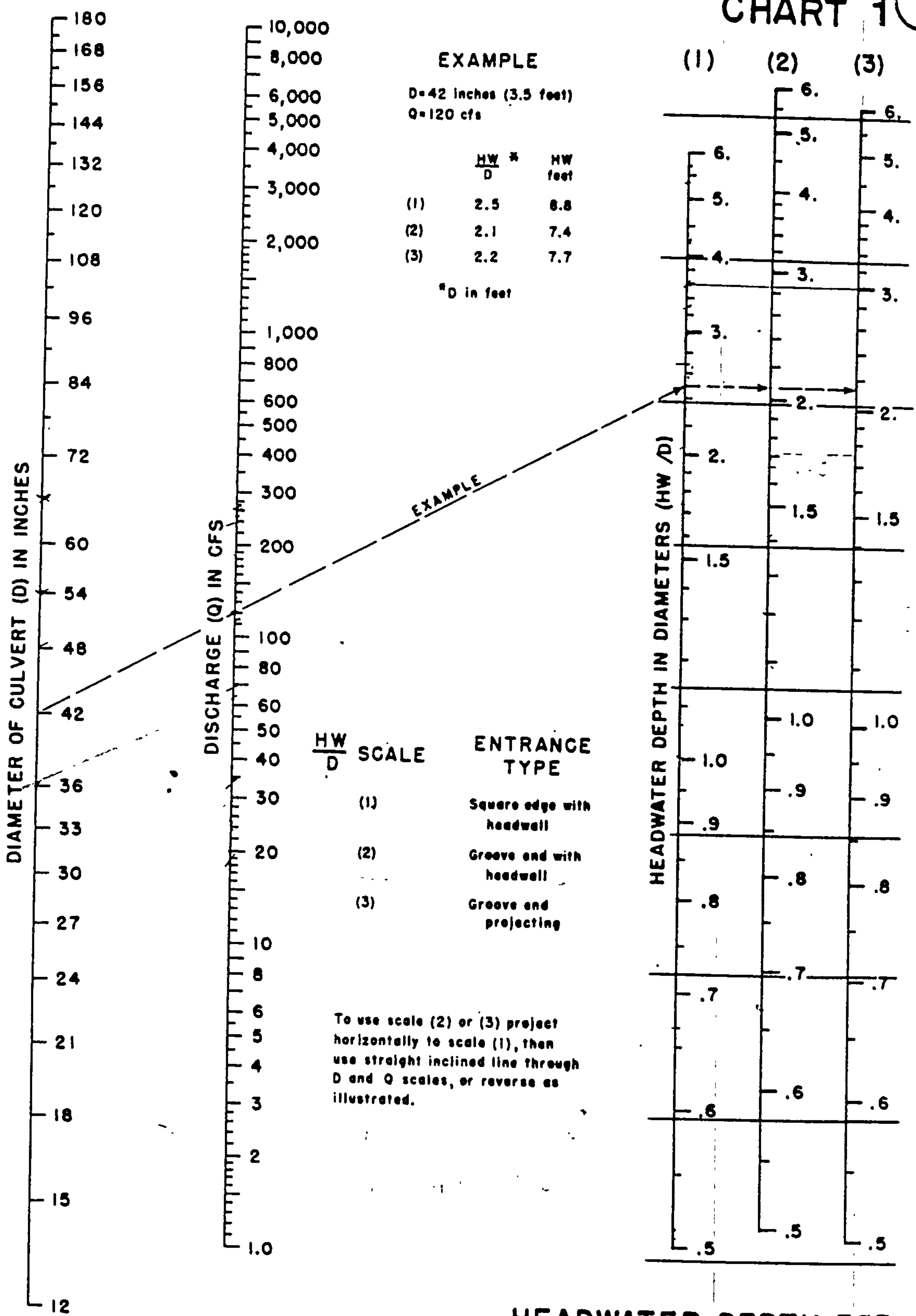
FLOW DEPTH (IN)	FLOW AREA (SQ FT)	DISCHARGE (CFS)	VELOCITY (FPS)
2.00000	0.15449	0.76190	4.93184
4.00000	0.42932	3.30001	7.68661
6.00000	0.77437	7.65196	9.88155
8.00000	1.16962	13.72412	11.73382
10.00000	1.60224	21.36390	13.33380
12.00000	2.06255	30.38036	14.72952
14.00000	2.54258	40.55319	15.94961
16.00000	3.03532	51.63707	17.01207
18.00000	3.53429	63.36338	17.92818
20.00000	4.03326	75.43979	18.70443
22.00000	4.52600	87.54809	19.34339
24.00000	5.00603	99.33877	19.84383
26.00000	5.46634	110.42130	20.20022
28.00000	5.89896	120.34489	20.40104
30.00000	6.29421	128.55800	20.42480
32.00000	6.63926	134.30688	20.22920
34.00000	6.91409	136.27980	19.71044
36.00000	7.06858	126.72686	17.92819

Q = 13.81

d = 15.81"

Q = 13.81

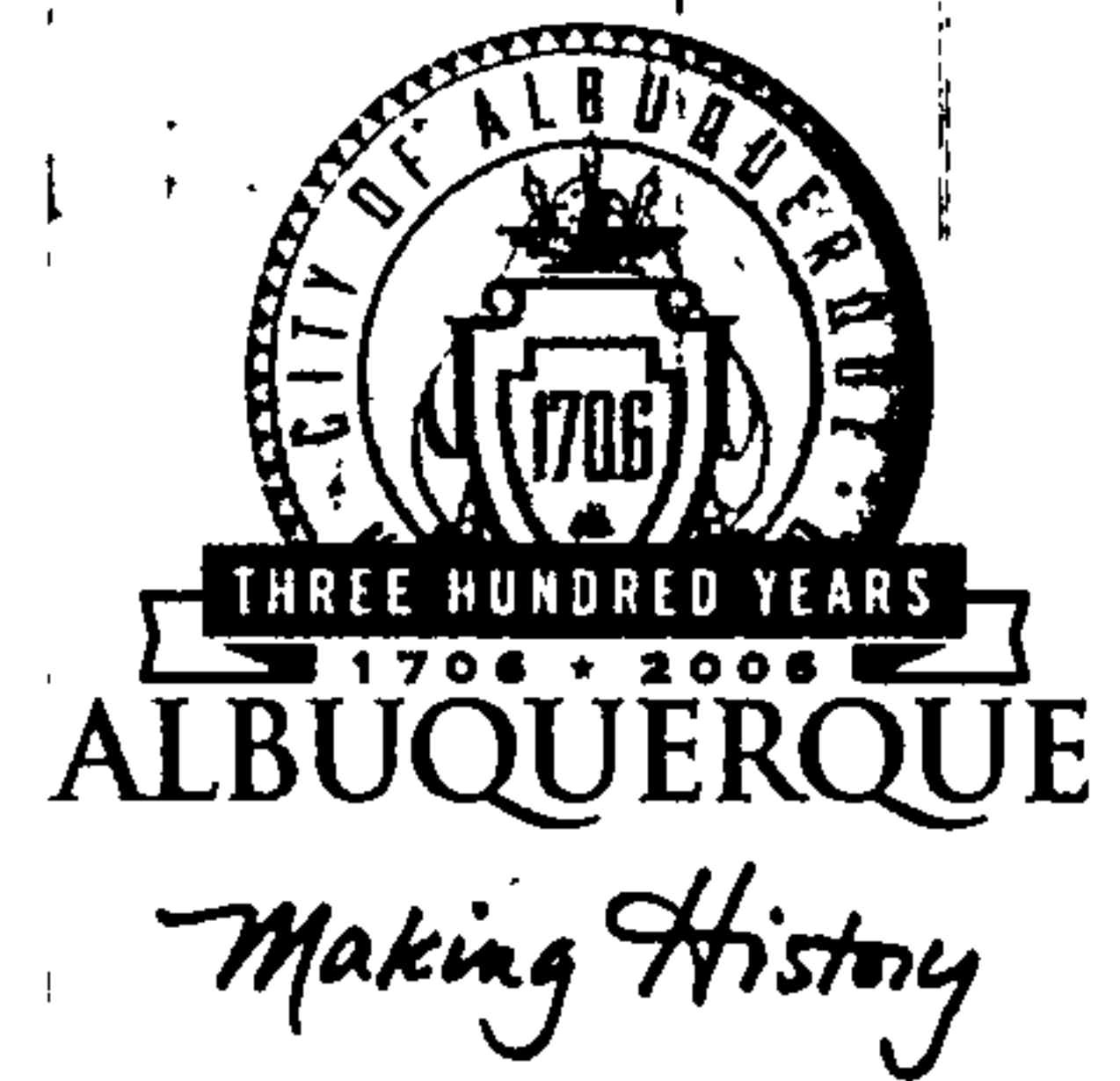
CHART 1



HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

HEADWATER SCALES 2 & 3
 BUREAU OF PUBLIC ROADS JAN. 1963
 REVISED MAY 1964

CITY OF ALBUQUERQUE



April 4, 2006

Jean Bordenave, P.E.
Bordenave Designs
P.O. Box 91194
Albuquerque, NM 87199

**Re: Porter Residence, Snake Dancer Court NE, Grading and Drainage Plan
Engineer's Stamp dated 1-31-06 (E23-D3C1)**

Dear Mr. Bordenave,

Based upon the information provided in your submittal received 2-15-06, the above referenced plan is approved for Building Permit. Attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology. **Please be aware that the masonry retaining wall must be fully grouted to one foot above the natural grade.** For future submittals, please note that a standard plan sheet must be 24" by 36" having a margin of 2" along the left and 1" on the top and bottom (see DPM, Chapter 27). Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

If you have any questions, you can contact me at 924-3981.

Sincerely,

Kristal D. Metro, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

C: File

RECEIVED BHI JUL 14 1999



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

July 9, 1999

Kevin Patton, P.E.
Bohannon-Huston, Inc.
7500 Jefferson NE
Albuquerque, New Mexico 87109

RE: Drainage Report and Grading and Drainage Plan for Unit 2 of Desert Highlands at High Desert, Tract 15D-1B-2, (E23/D3C1) Submitted for Preliminary and Final Plat Approval, and Grading and Paving Permit Approval, Engineer's Stamp Dated 6/18/99.

Dear Mr. Patton:

Prior to approval of the above referenced plan for Unit 2 of Desert Highlands at High Desert, the plan must be revised to address the following comments:

- OK → 1. Please delineate the site on the flood maps provided with the LOMR submittal (Figures 5.5 and 5.6).
- EXISTS
PRUDENT
LINE → 2. The plan shows that the FEMA floodplain limits abut the proposed building envelopes on several of the Lots. Please plot the erosion setback (ESB) limit to demonstrate that none of the building envelopes encroach within the ESB.
3. The plan must indicate the minimum pad elevations for the Lots adjacent to the existing and proposed FEMA floodplains. The plan must also show the water surface elevations in the arroyos. The future finish floor elevations must be at least a foot higher than the water surface elevations. Although individual Lot Grading and Drainage plans are to be reviewed by the High Desert New Construction Committee, enforcement of the FEMA regulations is my responsibility, not theirs.

A complete resubmittal of the entire report is not necessary. Please resubmit the grading plans and above referenced figures only. If you have any questions, please call me at 924-3982.

Sincerely,

Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: Fred Aguirre, DRB-99-161
Jack Eichorn, High Desert Investment Corp.
File

7-20-99

OK to address
prior to Final
Plat sign-off