

APRIL 23, 2013

# DRAINAGE REPORT

FOR

INLAND KENWORTH  
Fortuna Rd West of 76<sup>th</sup> Street NW

BY



**ISAACSON & ARFMAN, P.A.**

*Consulting Engineering Associates*

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*Åsa Nilsson-Weber, PE*

*I&A Project No. 1941*



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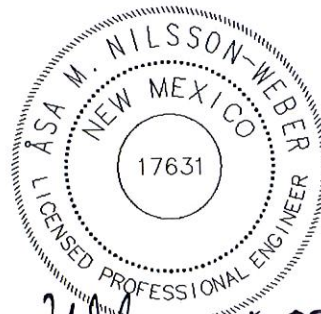
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Prepared by:

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*4-23-13*

Date

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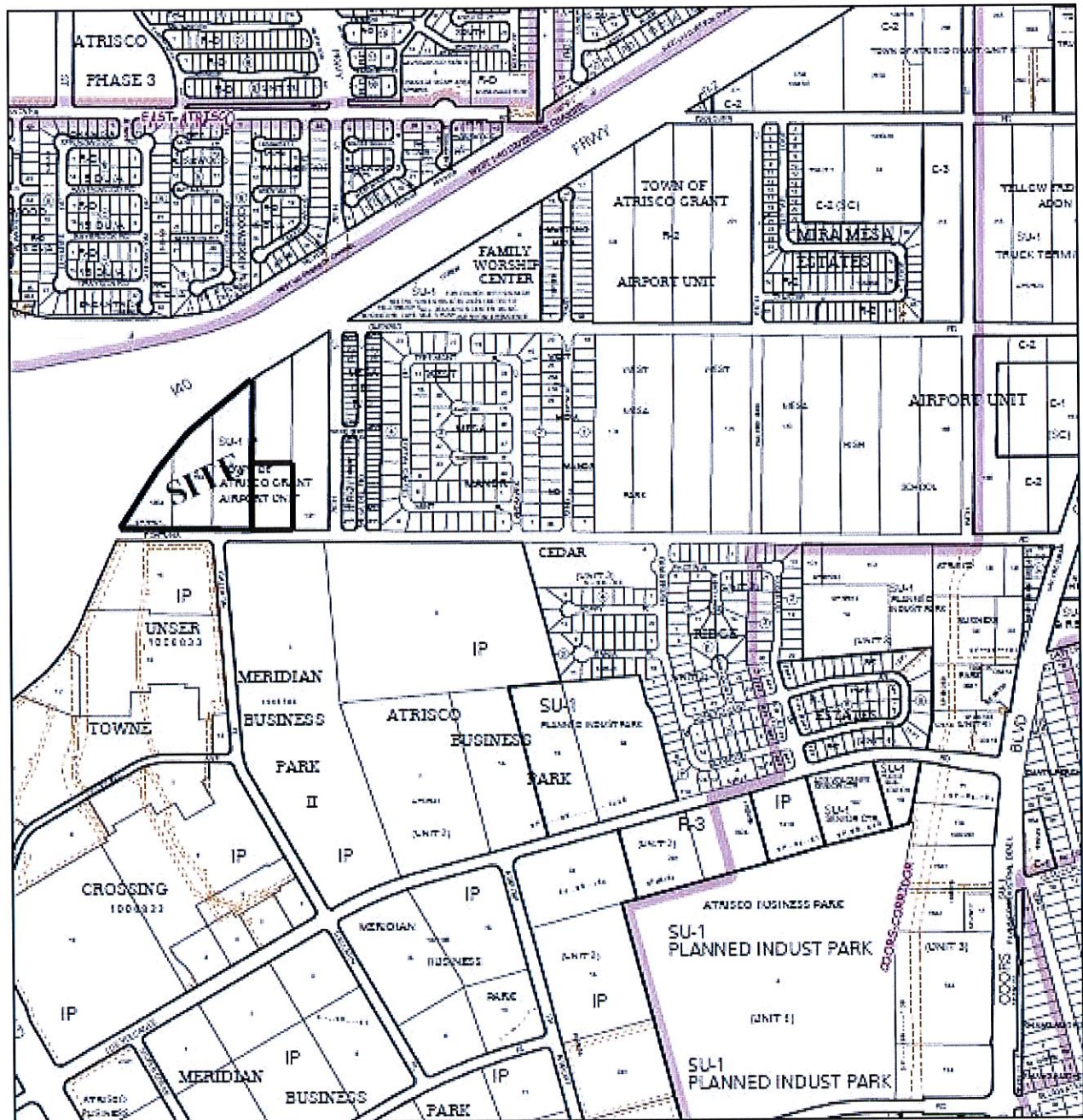
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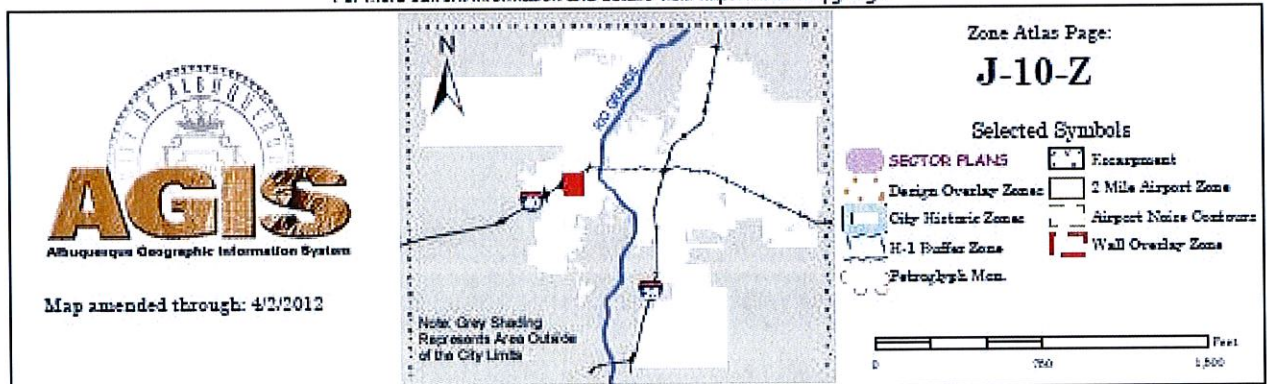
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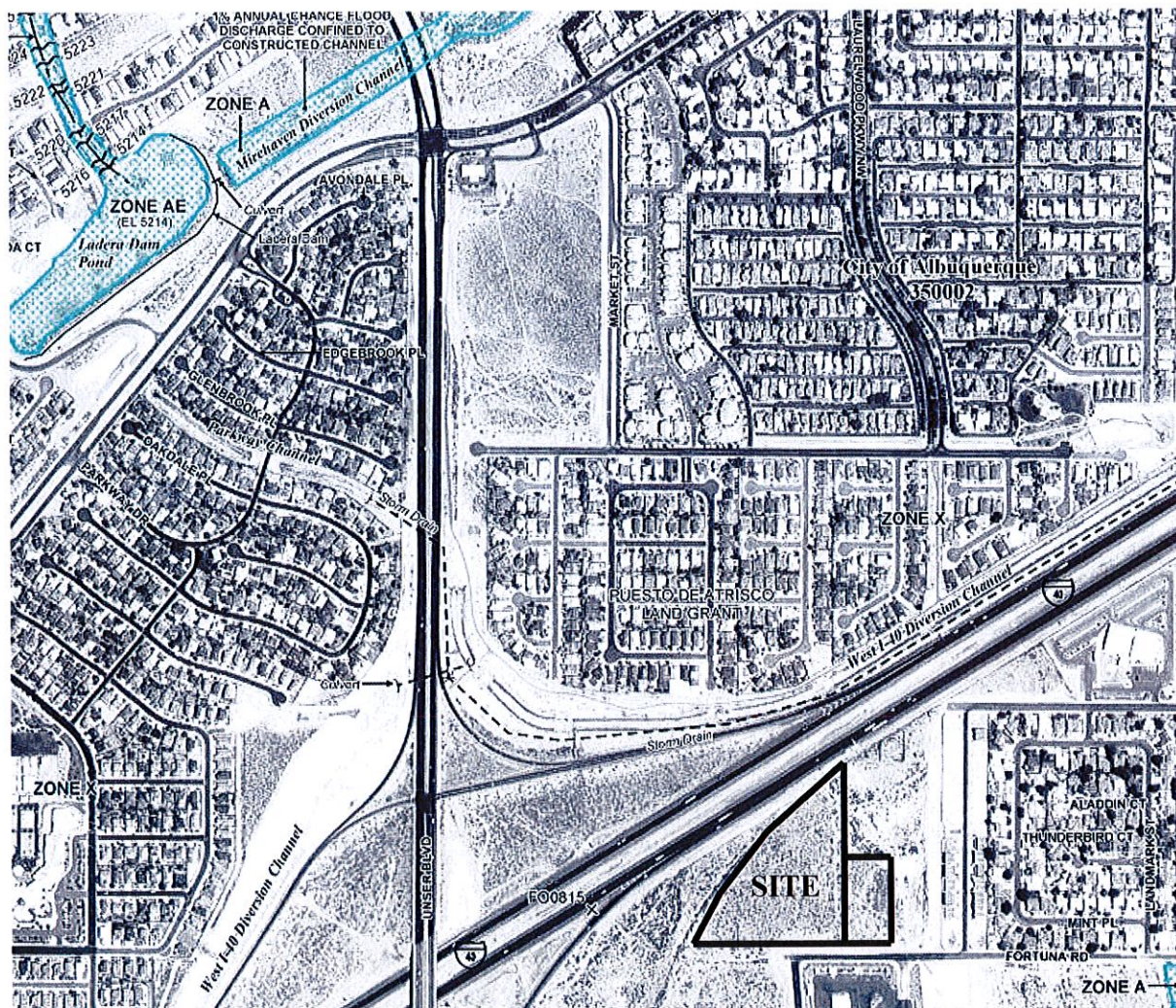



For more current information and details visit: <http://www.cabq.gov/gis>



## VICINITY MAP





<b>NFIP</b> <b>NATIONAL FLOOD INSURANCE PROGRAM</b>	<b>PANEL 0326H</b>			
	<b>FIRM</b>			
	<b>FLOOD INSURANCE RATE MAP</b>			
	<b>BERNALILLO COUNTY, NEW MEXICO AND INCORPORATED AREAS</b>			
	<b>PANEL 326 OF 825</b>			
	<small>(SEE MAP INDEX FOR FIRM PANEL LAYOUT)</small>			
	<b>CONTAINS</b>			
	<b>COMMUNITY</b>	<b>NUMBER</b>	<b>PANEL</b>	<b>SUFFIX</b>
	ALBUQUERQUE, CITY OF	350002	0326	H
	BERNALILLO COUNTY UNINCORPORATED AREAS	350001	0326	H
<small>Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used in insurance applications for the subject community.</small>				
		<b>MAP NUMBER</b> <b>35001C0326H</b>		
		<b>MAP REVISED</b> <b>AUGUST 16, 2012</b>		
Federal Emergency Management Agency				

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)

## FLOODPLAIN MAP

## ***1. PROJECT INFORMATION***

### **LEGAL DESCRIPTION:**

Tract 185-A, and a portion of Tracts 182 thru 184, Town of Atrisco Grant Airport Unit,  
City of Albuquerque, Bernalillo County, New Mexico

### **TOTAL AREA:**

8.86 Acres

### **FLOOD PLAIN:**

Zone X

This site lies outside the 100-year flood based on FIRM Map No. 35001C0326H  
Map Revision date: August 16, 2012

### **ENGINEER:**

Isaacson & Arfman, P.A.  
128 Monroe Street NE  
Albuquerque, NM 87108  
(505) 268-8828  
Attn: Åsa Nilsson-Weber

### **SURVEYOR:**

Surv-Tek, Inc.  
(505) 897-3366  
Attn: Russ P. Hugg, NMPLS No. 9750

### **LAND OWNER:**

Lord Constructors, Inc.  
1920 West Eleventh Street  
Upland, CA 91786  
Attn: Jim Allman

## **II. INTRODUCTION**

This drainage report includes the following changes to the drainage report dated January 6, 2013:

- A portion of Tract 182 has been incorporated into the site
- Onsite drainage basins and storm drain calculations have been revised.
- Offsite drainage swale within the NMDOT right-of-way has been eliminated.

The site is bound by Fortuna Rd. NW to the south and by Interstate 40 to the west and will be developed with a truck sales and service facility and parking. There are currently offsite flows entering the site from the I-40 corridor. These flows will be re-directed to a New Mexico Department of Transportation (NMDOT) drainage easement at the north end of the site. The onsite flows will be captured in inlets and conveyed to a storm drain in Fortuna Rd.

## **III. EXISTING CONDITIONS**

The site is currently undeveloped except for the NMDOT easement area at the northwest corner of the site where two culverts discharge flows from the I-40 corridor into a drainage channel that is directed to the future 76<sup>th</sup> Street located on the property to the east.

The existing public storm drain system at the intersection of Fortuna Rd. and the entrance to the site includes a 30" pipe with stubouts for two inlets. There are also four additional curb inlets in Fortuna Rd. west of 76<sup>th</sup> Street.

## **IV. PREVIOUS DRAINAGE REPORTS (PDR)**

This site has been studied in the following drainage reports:

- PDR-1. *Master Drainage Plan for Atrisco Business Park*, dated September 1992, Revised March 1993/October 1993, by Wilson & Co.
- PDR-2. *West Mesa Diversion Project Drainage Analysis, Draft Report*, dated May 1997, by Smith Engineering.
- PDR-3. *Mesa del Rio Subdivision*, dated October 2005, by Rio Grande Engineering.
- PDR-4. *Drainage Report for Meridian Business Park II, Supplement to the Master Drainage Plan for Atrisco Business Park*, dated August 2007, by Wilson & Company.
- PDR-5. *Drainage Report for FedEx Freight Albuquerque*, dated April 2008, by Wilson & Co.

Per these reports, the approved discharge from this site (portion of tract 182 and tracts 183, 184 and 185A) is 33.3 cfs (3.76 cfs/acre). See excerpt from PDR-4 in Appendix A. The



offsite flows from the I-40 corridor currently flows across the site. Per PDR-2, these offsite flows shall be directed to the NMDOT easement at the north end of the site via a swale in the NMDOT right-of-way paralleling the west property line. See excerpt from PDR-2 in Appendix A.

Per the previous master drainage reports (PDR-1 through PDR-4), all flows from properties south of Fortuna Rd. shall be directed south. However, PDR-5 shows that the FedEx development is discharging 10.1 cfs to Fortuna Rd. This flow was programmed to enter a temporary retention pond via a rundown from the street. See excerpt from PDR-5 and a photo of the rundown in Appendix A. The photo shows that the rundown does not convey street flows to the pond. Therefore, the 10.1 cfs will be directed east in Fortuna Rd.

## V. PROPOSED CONDITIONS

The site will be developed with a truck sales and service facility, parking and landscaping. Land treatments were calculated based on the impervious and pervious areas shown on the site plan. See Appendix B for Basin Map and AHYMO 100-year, 6-hour flow calculations.

- Basins 1 & 7 will drain to onsite inlet 1 west of the entrance with a connection to an existing 18" storm drain stub in Fortuna Rd.
- Basins 2, 3, 4 & 5 will drain to onsite inlets 2, 3 & 4 with a manhole connection in the 30" storm drain in Fortuna Rd.
- Basins 6, 8 & 9 will be landscaped retention areas for water harvesting.
- Basin 10—the NMDOT easement area at north corner of the site—will drain toward the Fortuna Rd. storm drain system via future 76<sup>th</sup> Street.

See below summary table for discharge from each basin:

Basin ID	Q <sub>100</sub> (cfs)	Discharge Location
1	8.84	Onsite inlet 1
2	9.93	Onsite inlet 2
3	4.43	Onsite inlet 2
4	4.25	Onsite inlet 3
5	3.16	Onsite inlet 4
6	0.93	Retained
7	0.88	Onsite inlet 1
8	0.75	Retained
9	0.82	Retained
10	0.75	To Fortuna Rd Storm Drain via Future 76 <sup>th</sup> St
<b>TOTAL</b>	<b>34.74</b>	

The site will discharge 32.2 cfs to the onsite storm drain system (including 0.8 cfs via future 76<sup>th</sup> St), which is 1.1 cfs less than the 33.3 cfs allowed. The remaining 2.5cfs will be retained in the depressed landscape areas.



## **OFFSITE DRAINAGE**

The Offsite NMDOT Drainage Basin Exhibit in Appendix B shows the offsite NMDOT basins and flow calculations. The Federal Highway Administration (FHWA) denied the request for grading within the NMDOT right-of-way. Therefore, the swale that was shown on the first drainage submittal has been eliminated. Instead, a diversion swale shall be constructed on the Inland Kenworth property along the west property line to divert the 41.9 cfs to the drainage easement at the north end of the site where two culverts discharge an additional 20.1 cfs for a total of 62 cfs. See Offsite NMDOT Drainage Basin Exhibit in Appendix B for section of the diversion swale.

## **STORM DRAIN**

The existing storm drain was designed for the basins north of Fortuna Rd. only, including the offsite flows from NMDOT right-of-way. However, the Fed-Ex development located south of Fortuna Rd. discharges 10.1 cfs to Fortuna Rd. (See Appendix A for excerpt from PDR-5). These flows were shown to discharge into a temporary pond via a rundown from the street, but per the photo included in Appendix A, there is no curb opening to convey the flows to this temporary pond. Per directives of Curtis Cherne, City Hydrology, the storm drain should be evaluated to determine whether capacity exists to include this flow and also flows from a portion of Lot 15, Unser Towne Crossing located west of the Fed-Ex tract since the existing topography indicates that the northerly portion of this lot would drain to Fortuna Rd. The drainage calculations shown on Storm Drain/Street Flow Exhibit in Appendix D show that the Lot 15 basin (OFF-1) would generate 8.1 cfs.

The storm drain system conveys flows to a pond south of Fortuna Rd. approximately 900' east of the site. There is an existing 30" storm drain adjacent to the site with two 18" stubs for future inlets just upstream of the entrance to the site. There are 4 inlets in Fortuna Rd. west of 76<sup>th</sup> Street—the inlets on the north side have been constructed though they are not shown on the as-builts included in Appendix B, and a stub for future inlets in 76<sup>th</sup> St. The future inlets in 76<sup>th</sup> St. will capture flows from the remaining portion of Lot 82 and Lot 81 and the NMDOT offsite flows.

The site will discharge 9.7 cfs to inlet 1 with an 18" storm drain connection to the existing stub in Fortuna Rd west of entrance, and 21.7 cfs to inlets 2-4 with a 24" storm drain and manhole connection to the existing 30" storm drain in Fortuna Rd. Since the flows from this site do not discharge into the street but directly to the storm drain, additional inlets on the north side of Fortuna Rd. will not be required.

Storm Drain Calculations are included in Appendix D. The storm drain was modeled from the existing manhole at 76<sup>th</sup> Street. The starting HGL was approximated at 17.7' from the Fortuna Rd. storm drain as-builts (See Appendix C). In order to account for the additional 10.1 cfs from the Fed-Ex tract that will be captured in inlets further downstream, an additional 0.5' was added to the starting HGL for a total of 18.2'. The storm drain calculations assume that an inlet at the south stub will be installed with the development of Lot 15. The need for this inlet depends on the discharge location of this basin, to be determined with the Lot 15 development. Should an inlet not be installed, the 8.1 cfs from Lot 15 would be captured in the four inlets west of 76<sup>th</sup> St.

## **STREET CAPACITY**

Fortuna Rd. has a 60' right-of-way width and 40' face-to-face standard curb. Until Tract 181 is developed and inlets constructed to capture the offsite NMDOT flows, these flows will surface discharge to Fortuna Rd. at 76<sup>th</sup> St. The total undeveloped street flow at this location is 88.5 cfs. Per street capacity calculations in Appendix D, the flow depth at this location is 0.64'. At a flow depth of 0.67' (top of curb) and a slope of 1.0%, street has capacity for 95.8 cfs.

## ***VI. SUMMARY AND CONCLUSIONS***

The site will be developed with a truck sales and service facility, parking and landscaping. A private onsite storm drain and minor flows from the NMDOT easement area will discharge 32.2 cfs to the Fortuna Rd. storm drain (1.1 cfs less than allowed). The remaining flows of 2.5 cfs will be retained in the depressed water harvesting ponds in the landscaping areas.

The site will discharge 9.7 cfs to inlet 1 with an 18" storm drain connection to the existing stub in Fortuna Rd west of entrance, and 21.7 cfs to inlets 2-4 with a 24" storm drain and manhole connection to the existing 30" storm drain in Fortuna Rd

Offsite flows from the NMDOT right-of-way will be diverted in a swale to the NMDOT easement at the north end of the site and be directed to the future 76<sup>th</sup> St. inlets as shown in the West Mesa Diversion Project Drainage Analysis.

An additional 8.1 cfs from Lot 15, Unser Towne Centre, shall be allowed to discharge into the Fortuna Rd. storm drain system. An inlet may be installed west of Gallatin Pl. at the existing 18" stub with the Lot 15 development. The storm drain calculations in Appendix D show that the system has capacity for these added flows.

Until Lot 181 is developed, offsite NMDOT flows shall continue to surface discharge to Fortuna Rd. Per street capacity calculations in Appendix D, street has capacity to carry those flows in addition to the 10.1 cfs being discharged from the Fed-Ex development.