



# Smith Engineering Company

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File

July 26, 2010

Mr. Roland V. Penttila, PE  
Department of Municipal Development  
Storm Drainage Design  
City of Albuquerque  
P.O. Box 1293  
Albuquerque, New Mexico 87103

Re: Salt Storage Facility - Northwest  
SEC# 110109A

Dear Roland:

This letter report will discuss the evaluation, completed by Smith Engineering Company (SEC), of the storm water storage capacity of the Cibola Pond #1 regional detention pond located at the intersection of the Coors Bypass and Ellison Street and just east of Cibola High School. SEC has evaluated the existing required storage capacity and the effect on that storage capacity that a reduced pond size would have to accommodate a proposed salt storage facility. A revised AHYMO model was prepared to qualify the existing conditions and to determine the effect on the pond if it was made smaller to accommodate the proposed salt storage facility. The area needed for the proposed salt storage facility is 150 feet by 200 feet. The design storm is the 100-year, 24-hour event.

SEC has obtained many of the record drawings associated with the SAD 223 storm drain system improvements for drainage basins contributing storm water runoff to the Cibola Pond #1 regional detention pond. These record drawings helped to determine the storm water runoff volume being conveyed to the pond from the various drainage basins. There are 14 contributing drainage basins totaling approximately 160 acres (0.25 sq. mi.).

SEC completed a review of the SAD 223 Drainage Management Plan, prepared by Easterling & Associates, Inc. (EAI) and dated May 1991, revised through July 1994. SEC verified the contributing drainage basins and the full development land use type for the AHYMO model. Of the 14 contributing drainage basins, 10 used the same land use type as the SAD 223 report. For the remaining 4 drainage basins, SEC increased the impervious area by a few percentage points to account for possible future development, increased impervious areas on the Cibola High School drainage basin and to provide a more conservative runoff volume estimate.

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The sum of the runoff volumes from all of the contributing drainage basins was computed by AHYMO to be approximately 22.9 acre-feet. This volume is a conservative value, estimated on the high side. If the ROUTE command was used to route the runoff through the existing subsurface storm drain system, a lower volume would have been computed due to the inherent attenuation that occurs by routing. By simply summing the runoff from each basin a higher estimated volume was computed.

Field measurements of the existing outlet structure were done to allow for an accurate modeling of the detention pond outflow. The existing outlet structure is a complex arrangement of orifices, weirs and an outlet pipe.

A comparison of the revised AHYMO model to the 1994 SAD 223 AHYMO model shows a fairly close relationship of the stage / storage / elevation values for the regional detention pond between the two models.

Based on the revised AHYMO model for the existing conditions, the runoff volume entering the pond was computed to be 22.9 acre-feet. The maximum pond storage volume was computed to be 17.16 acre feet at an elevation of 5051.9 feet. The elevation of the emergency spillway is at approximate elevation of 5058.45, according to the record drawings. (Note: this elevation is an estimate because the record drawings are difficult to read. It seems the elevation of the spillway is called out at 5058.45.). This allow for approximately 6 feet of freeboard. The peak discharge rate was computed to be 12.9 cfs.

The City of Albuquerque would like to use a portion of the existing Cibola Pond #1 regional detention pond for a new salt storage facility. The area needed would be roughly equal to the size of the adjacent skate park, which is approximately 150 feet in the north-south direction and 200 feet in the east-west direction. This area would be filled so the volume available for storm water storage would be reduced by this amount.

The current pond volume, based on the record drawings, is estimated to be approximately 27.12 acre feet up to elevation 5055. The reduced pond size would lower the storage volume to approximately 22.4 acre feet up to elevation 5055.

The revised AHYMO model for the reduced size pond gave a maximum pond storage volume of approximately 17.12 acre feet at an elevation of 5053.1 feet. This allows for approximately 5 feet of freeboard. The peak discharge rate goes up to approximately 13.7 cfs, an increase of 0.8 cfs, due to the increase in maximum water surface elevation.

In summary, it appears that there is sufficient volume in the proposed reduced size pond to allow for the reclaiming of the southern portion of the pond to be used for a proposed COA salt storage facility. If the pond is reduced in size by filling the 150' x 200' site for the proposed salt storage facility, the 100-year runoff will cause a rise in the maximum water surface elevation of 1.2 feet at maximum storage (from elevation 5051.9 to 5053.1) when compared to the existing pond. The peak discharge will increase by 0.8 cfs, from

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the existing 12.9 cfs to the proposed 13.7 cfs, due to the increased water surface elevation. These are conservative values, due to modeling assumptions, and err on the high side.

Attached is a sketch showing the proposed area for the salt storage facility

I would be glad to meet with you if you have any questions or to discuss the analysis and the findings in more detail. Also, I have not included any of the backup files, calculations or drawings. Please let me know if you would like these for your files.

Sincerely,

Smith Engineering Company

George Nemeth, P.E.  
Vice President / Project Manager

Enclosure

cc: John Curtin, PE, COA

24, 2009

Cibola Pl NW

35°12'12.10" N 106°39'37.18" W elev 1542 m

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Eye alt 1.86 km

Google



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Bozwell, NM Midland, TX Albuquerque, NM  
Las Cruces, NM Durango, CO

## COA-SALT STORAGE FACILITY

SCHEMATIC FOR REDUCED-SIZE  
DETENTION POND

NO.	REVISION	DESCRIPTION	DATE	BY
5				
4				
3				
2				
1				

NOT TO SCALE

