Department of Energy

ALBUQUERQUE OPERATIONS
ROCKY FLATS AREA OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

MAY 04 1989

George R. Dancik, Jr.
Public Health Engineer
Colorado Department of Health
Waste Management Division
4210 E. 11th Avenue
Denver, Colorado 80220

Dear Mr. Dancik:

During the March 7, 1989 inspection of the Rocky Flats Plant solar evaporation ponds, the Colorado Department of Health noted some buckling of the asphalt liner at the top of the Pond 207-C berm and requested an engineering evaluation of the stability of the berm. As you requested, a copy of the report from an independent engineer is enclosed. The report indicates no evidence of embankment failure but does make some recommendations concerning minor repairs on parts of the berm. These repairs will be made.

Questions concerning the contents of the report can be directed to Ms. Candice Jierree of my staff at 966-4888.

Sincerely,

for Rush O. Inlow
Acting Area Manager

Enclosure

cc w/o encl:
M. Arndt, Rockwell

Chen-Northern, Inc.

96 South Zuni
Denver, Colorado 80223
303/744-7105
Fax: 303/744-0210

Billings
Boise
Casper
Colorado Springs
Denver
Elko
Evanston
Gillette
Glenwood Springs
Great Falls
Helena
Phoenix
Pocatello
Rock Springs
Salt Lake City
San Antonio
Tri Cities
Yakima

March 21, 1989

Subject: Site Observation, Solar Pond C Embankment, Rocky Flats Plant, Jefferson County, Colorado

Job No. 6 033A 88

Mr. Michael Arndt
Rocky Flats Plant
North American Space Operations
Rockwell International Corporation
P.O. Box 464
Golden, Colorado 80402-464

Dear Mr. Arndt:

This letter presents the results of a site visit conducted to evaluate the Solar Pond C embankment. The purpose of the visit was to make observations at the pond in order to evaluate the existence of conditions which might result in a breach of the embankment and loss of contents.

The writer met with you and Mr. Brent Lewis of Rockwell International on Tuesday, March 14, 1989, to observe Pond C and its immediate vicinity. The site visit was conducted by walking around Pond C at several different elevations beginning at the embankment crest and ending approximately 20 feet in elevation below the crest on the natural hill slope north of the pond.

During the visit particular attention was directed towards the presence of irregular surface topography or seepage. Irregular surface topography would be indicative of instability resulting from rotational or translational failures in the earth mass which composes the embankment and the natural topography in the area. Seepage is problematic since it tends to increase the driving forces and decrease the resisting forces which sustain stability in an earth mass. In addition seepage forces can result in piping failures where excess pressure gradients result in the progressive removal of articles from an embankment until loss of the retained water is complete.

Water was present on the natural slope approximately 20 feet below the pond elevation at two locations northeast of the pond. The first location is a ground water seep designated as SW-85 and the second is a culvert which empties into a surface drainage ditch. These seeps are not related to the stability of Pond C.

There is a leak detection system beneath the Pond C. Sumps for this system are located west and north of the pond. The west sump does not collect water, however, the north sump periodically collects water which is emptied back into Pond C by a hose which discharges at the pond crest. An employee at the pond estimated that the sump discharges every two weeks during the summer and every other day during the spring time.

As a result of our investigation we saw no surface topographic irregularities or any indication of seepage in the vicinity of the embankment. We, therefore, conclude that the embankment was not threatened by mass instability or piping failure at the time of our investigation.

During the investigation some conditions were noted which should be included in the ongoing maintenance program for the solar ponds. First, the embankment which forms the pond should be maintained in its original configuration of three horizontal to one vertical exterior slopes. This condition had been modified in the vicinity of the retaining structure in the northeast corner of the pond and to a somewhat lesser degree in the southeast corner of the pond where a semi trailer was parked. The modifications consisted of excavations at the toe of the embankment resulting in an oversteepened vertical toe scarp. This condition reduces the mass of the embankment which resists slope failure and shortens the seepage path through the embankment for any fluids which in the future might bypass the liner. We suggest the embankment be rebuilt to its original configuration using a clean fill containing more than 40% passing the U.S. No. 200. The fill should be placed in lifts and compacted to at least 95% of the maximum standard Proctor density.

The pond liner above the fluid surface had split in several areas and should be repaired by resealing these areas with a compound approved by the original liner manufacturer/installer.

If you have any questions concerning this information, please feel free to contact me.

Sincerely,

CHEN-NORTHERN, INC.

By _____
David M. Jubenville, P.E.
Vice-President

DMJ/djb
Encs.
cc: Mr. Michael Anderson, P.E.
Project Director