LETTER REPORT REGARDING 4 AND 5 JANUARY 1990 FIELD ACTIVITIES AT TRUMBO POINT NAS KEY WEST FL

2/21/1990

ERM-SOUTH INC

ERM-South, Inc.

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Reply To: Tampa office

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Project No. 13732.01

William L. Pence, Esq.
Akerman, Senterfitt & Eidson
Firstate Tower 17th Floor
255 South Orange Avenue
Orlando, FL 32801

RE: Field Activities--January 4 and 5, 1990, Trumbo Point Naval Base, Key West, Florida

Dear Bill:

Pursuant to our proposal number T89182 dated December 21, 1989, Environmental Resources Management-South, Inc. (ERM) installed monitor wells and collected ground water samples for subsequent analysis. The results of the sampling and analysis are contained in this report.

INTRODUCTION

ERM personnel supervised the installation and sampling of three monitor wells located within bermed areas of aboveground storage tanks number CON-1 and CON-2, owned and operated by the Key West Pipeline Company at the Trumbo Point Tank Farm, Key West, Florida. The wells were installed in an attempt to determine whether petroleum contamination discovered within the bermed area of the Company's aboveground tanks is separate and distinct from petroleum contamination detected near the United States Navy's underground diesel fuel storage tanks at the Trumbo Point Tank Farm. In addition to the data generated by ERM's work at this site, we have reviewed a report prepared by the Site Investigation Section of the Florida Department of Environmental Regulation (FDER) describing the results of FDER's field work conducted at this site in July 1989, "Trumbo Point Fuel Storage Facility, Ground-Water Investigation Report Number 89-05 (October 1989)." Based upon the results of the ground water investigations conducted by ERM and FDER, it is our opinion that separate and distinct plumes of petroleum contamination are present at the area of study. Support for this opinion follows.

WELL INSTALLATION SPECIFICS

The wells installed by ERM were located as follows: one well was installed south of tank CON-2, one well was installed south of tank CON-1, and one well was installed west of tank CON-1 (see Figure 1). The wells installed were two-inch-diameter PVC, 12 feet deep. The wells were constructed with a 0.010-inch slotted screen, 20/30 silica sand pack, bentonite seal, and grout plug and were finished above grade with a permanent protective casing. The subsurface conditions were similar for all three wells. Specifically, tan limerock fill was

encountered to three feet below grade, and a grey soft clay was encountered from 3 feet to 12 feet below grade. As noted on the well installation sketch, two wells were installed within the bermed area of tank CON-1. Free product was not detected in either of the wells installed in the bermed area of tank CON-1. In the well installed south of CON-2, free product was encountered during development of the well. To determine whether another area south of CON-2 was suitable for well installation (i.e., no free product encountered), two additional auger borings were advanced to the water table, one along the west berm of CON-2 and one along the east berm of CON-2 (see site sketch). Both borings confirmed that free product was floating on the water table south of CON-2. The well south of CON-2 had approximately one inch of free product in it. Boring A, to the east of CON-2, had approximately one-quarter inch of free product, and boring B, to the west, had approximately one-sixteenth inch of free product.

SAMPLING PROCEDURES

Ground water from wells CON-1A and CON-1B was sampled using ERM's FDER-approved Quality Assurance Project Plan (QAPP). No problems were encountered during the sampling of these two wells. To allow for the sampling of ground water below the floating layer of free product in well CON-2, a device was constructed to allow for the withdrawal of ground water from the well without collecting any free product in the sample. The collection device consisted of a length of PVC pipe with a check valve on the bottom of it. The pipe and check valve were inserted through the floating free product layer, with the check valve closed, after which a small diameter pipe was inserted down through the sampling device to actuate (open) the check valve. The sampling device was then withdrawn from the well and the ground water poured into the sample container. Several attempts at using this sampling method were needed to collect enough ground water for sample analysis. After the ground water sample was collected, a dedicated bailer was used to collect a sample of free product from well CON-2 for sample analysis. Both the collection of ground water and free product samples at CON-2 were conducted after sampling of wells CON-1A and CON-1B to prevent cross-contamination between wells. In addition to the well samples mentioned above, a rinse blank, equipment blank, and blind duplicate were also collected onsite and sent to the laboratory.

RESULTS AND DISCUSSION

The results of chemical analysis of ground water samples collected by ERM personnel at the Key West Pipeline facility are attached. The sample identified as CON-1A was found to be free of volatile or semivolatile impacts. Sample CON-1B has a moderate concentration of the volatile organic compounds [benzene, ethylbenzene, toluene, and xylene (BETX)] associated with light petroleum distillates, such as gasoline or jet fuel.[1] Sample CON-2 contained elevated concentrations of toluene (97 µg/L) and naphthalene (220 µg/L).

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[1]Geoffrey B. Watts, *Groundwater Monitoring Parameters and Pollution Sources*, Third Edition (Tallahassee, FDER, 1989).

The collected data, along with the data presented in the FDER study, strongly suggest the presence of two distinct areas of impact of two different petroleum products. Support for the two-plume conclusion is supplied by a line of unimpacted ground water samples between the two impacted areas and the chemical constituents of the impacts found in the two areas, which can be related back to different petroleum products.

Monitor well KWM-25, installed by Geraghty and Miller in 1986, and monitor well CON-1A, installed by ERM in January 1990, produced ground water samples that were unimpacted by either volatile or extractable target organic compounds. These two sample locations define a line of unimpacted ground water between the two impacted areas known as Area 1 and Area 2, shown in Figure 5.1 of the FDER study. The presence of an unimpacted line of ground water suggests the presence of two distinct areas of impact.

According to Watts (1989), phenanthrene is a key indicator parameter for diesel fuel (#2 fuel oil) but is not expected to be present as a result of jet fuel or gasoline impacts. Phenanthrene appears in high concentrations (greater than 500,000 µg/kg) in samples (KWM-23 and KWM-24) collected from the south side of the line defined by clean samples CON-1A and KWM-25, but phenanthrene does not appear above detectable limits in any sample collected north of that line. This fact provides further evidence that the impacts of Area 1 are from a different source and are separate from the impacts in Area 2.

The presence of BETX and naphthalene (BETXN) on both sides of the line of unimpacted ground water does not imply that the impacted areas are from the same source, since BETX and naphthalene are monitoring parameters common to jet fuel, gasoline, and diesel fuel.

CONCLUSIONS

Because of the chemical differences of the impacts found in Area 1 and Area 2 (phenanthrene) and the apparent line of unimpacted ground water that lies between the two areas, it is our opinion that the impacts are separate rather than one continuous plume.

If you have any questions or comments, please do not hesitate to contact me.

Sincerely,

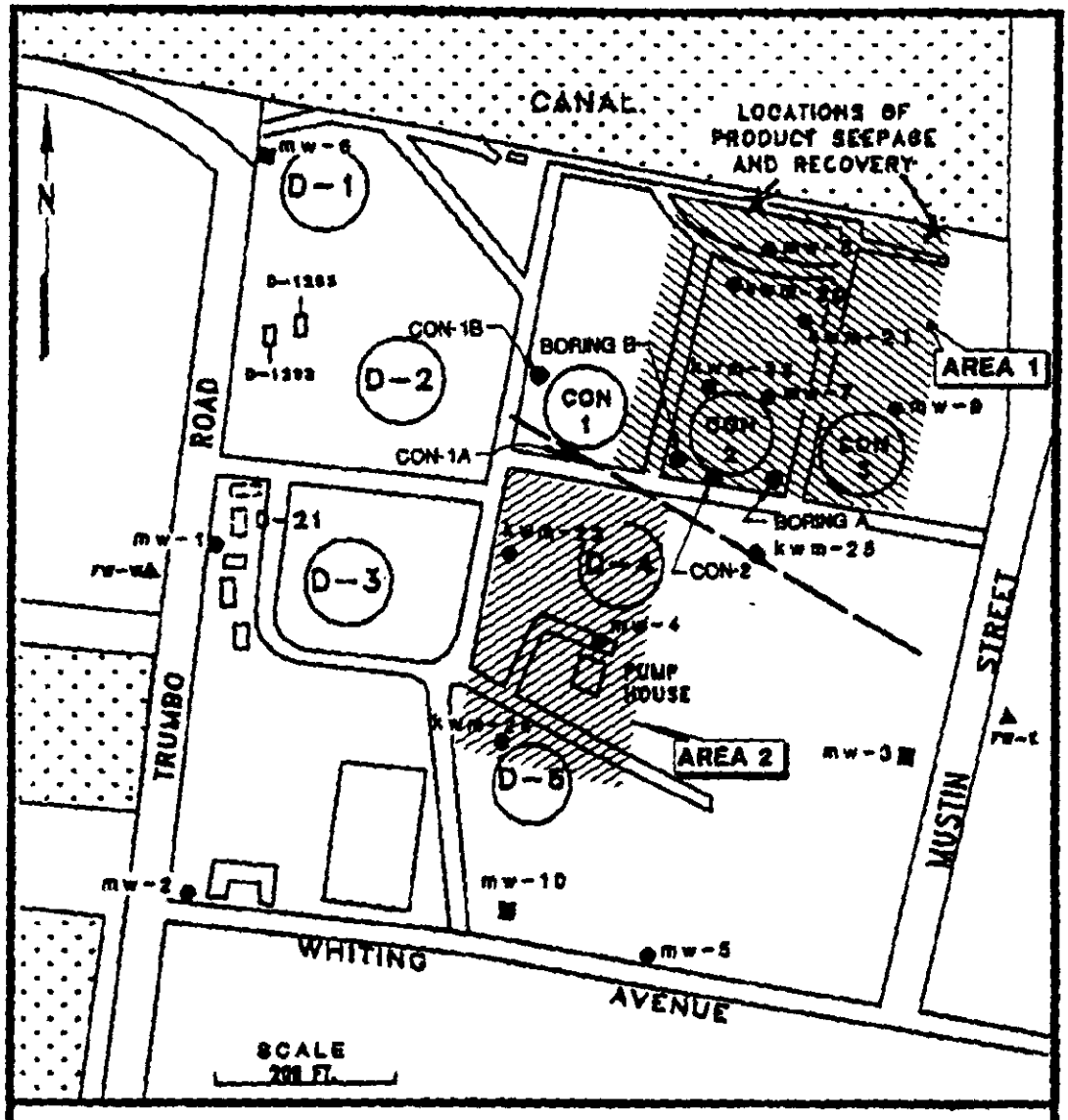
for P.G.

Paul Gruber, P.G.
Principal

dg/th/bai:yec:pjh

cc: Tom Hastings, ERM
Jeff Lorrain, ERM

FIGURE 1



ADAPTED FROM DER STUDY

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