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NAS CECIL FIELD, FL
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LETTER REGARDING UNIVERSITY OF FLORIDA COMMENTS ON TETRA TECH
RESPONSE TO COMMENTS ON DRAFT TECHNICAL MEMORANDUM FOR NO FURTHER
ACTION AT POTENTIAL SOURCE OF CONTAMINATION 44 NAS CECIL FIELD FL
10/15/2001
UNIVERSITY OF FLORIDA



October 15, 2001

Ligia Mora-Applegate
Bureau of Waste Cleanup
Florida Department of Environmental Protection
Room 471A, Twin Towers Office Building
2600 Blair Stone Rd.
Tallahassee, FL 32399

Dear Ms. Mora-Applegate:

In a letter to you dated June 28, 2001, we commented on the *Draft Memorandum for No Further Action, Potential Source of Contamination 44 Ditch from DRMO to Wastewater Treatment Plant* prepared by Tetra Tech NUS, Inc. (TTN). We have received an electronic copy of slides from a presentation by TTN responding to our comments. Although a narrative response would be preferable in terms of clarity, we have tried to interpret the responses from these slides as best we can. We also reviewed an e-mail message from Miké Whitten of TTN, which provides additional explanation for their assumption that incidental soil ingestion constitutes 3% of a shrew's food consumption.

The following summarizes our thoughts on the TTN responses to comments.

Response to Comment 1: Our comment expressed concern regarding the choice of the green heron for modeling exposure of piscivorous birds. This species is not included in the Wildlife Exposure Handbook, and a rather large home range size (100 Ha) had to be estimated by TTN using an allometric relationship for raptors. Other piscivorous birds with much smaller home ranges may utilize the site, and modeling based on the green heron is therefore not very conservative. We recommended instead using information for the Belted kingfisher as representative of avian piscivores. It is a similar-sized bird, but its home range is less than 1/10 of that used by TTN. The response to our comment states that habitat is not conducive of kingfishers, and that "Home range is not an issue because fish in the drainage ditch would only comprise a small portion of either birds

total diet." Under present site conditions, the habitat may not be conducive to kingfishers, but the point is that the home range area chosen for piscivorous birds is too large to be protective for all members of this guild that may use the site. For comparison, recent efforts by the Kennedy Space Center Ecological Risk Assessment Partnering Team has identified a home range of 8.4 Ha based on the much larger Great blue heron. Also, we do not understand the contention that home range area is not important. It is implied that an area use factor will be applied in calculating risks, which requires an estimate of the home range and site size. If some other approach will be used, this should be explained.

Response to Comments 2: In our comment, we suggested using an incidental soil ingestion rate of 10% of diet based work by Beyer et al. (1993) rather than 3%, as originally proposed by TTN. Mike Whitten has received verbal information regarding a study supporting the 3% assumption, apparently based on the stomach contents analysis of wild shrews. We would like to see a write up of this study, but have reservations about its value. Our experience evaluating food habit studies suggest that this approach may be unreliable because of the many factors that influence an animal's gut content at any given time, and because of significant variation among individuals. An analysis of ash residues from scats might yield more representative data, but we are aware of no data published for shrews using this approach.

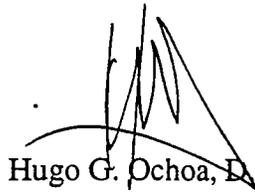
Our concern that a 3% incidental ingestion rate is too low comes from calculations of soil intake through ingestion of earthworms. Dalby et al. (Soil Biol. Biochem., 28:685-87, 1996) measured soil gut content of four earthworm species by leaving them on wet filter paper for 72 h and then weighing the casts of soil they defecated. From these data, we calculate that the earthworms had 6.98% plus/minus 3.42% (dry-wt/dry-wt) soil in their gut. This is probably a low estimate. Beyer et al. (J.Wildl.Manage., 58:375-82, 1994) state that "Wildlife preying on soil invertebrates or aquatic organisms associated with sediments may ingest much soil or sediment. Earthworms are typically 20-30% soil. Acid-insoluble ash contents of earthworms have been measured as 13 and 24% (this study) and 5-41% (Stafford and McGrath 1986). Soil contents have been estimated at 30% (Beyer et al. 1993) and about 20% (Hendriksen 1991)". Clearly, a shrew diet consisting entirely of earthworms would include more than 3% soil. It could be argued that the shrew diet may not be 100% earthworms, and that consumption of other prey probably involves less incidental soil ingestion. Given the observations by Beyer et al., using a 10% incidental soil ingestion assumption would allow for this to a considerable extent (i.e., it would assume in effect that the diet is no more than about one-third to one-half earthworms, based on a soil content of 20-30%). This is probably as refined an estimate as can be made without a study to determine

dietary composition for animals at the site. Even a 10% incidental soil ingestion estimate is not particularly conservative, since it is based on incidental soil exposure through the diet only, and doesn't consider intake from other activities such as grooming.

Response to Comments 3, 4 & 5 : As best we can determine from the slides, the TTN explanations and proposed adjustments in response to these comments are adequate and sufficient.

We hope these comments are helpful. Should you have any questions, please do not hesitate to contact us.

Sincerely,

A handwritten signature in black ink, appearing to read 'Hugo G. Ochoa', with a large, sweeping flourish underneath.

Hugo G. Ochoa, D.V.M., Ph.D.

A handwritten signature in black ink, appearing to read 'Stephen M. Roberts', with a large, looping flourish above the name.

Stephen M. Roberts, Ph.D.