



Florida Department of Environmental Protection

Southeast District Office
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West Palm Beach, Florida 33401-2913

Charlie Crist
Governor

Jeff Kotskamp
Lt. Governor

Michael W. Sole
Secretary

via email: gilleted@erdmananthony.com

Dana I. Gillette, PE, PSM
Erdman Anthony
1402 Royal Palm Beach Blvd.
Building 500
Royal Palm Beach, FL 33411

Re: Royal Palm Beach Commons (fka Traditions Golf Course); Village of Royal Palm Beach; Soil and Groundwater Plan; Located between Southern Blvd & Okeechobee Blvd. Palm Beach County

Dear Ms. Gillette:

The Department has reviewed the document entitled "Soil and Groundwater Management Plan", Royal Palm Beach Commons, dated October 23, 2007 (received on October 29, 2007) prepared by Erdman Anthony, and the Site Specific Alternative Soil Cleanup Target levels dated July 30, 2007, prepared by Hazardous Substance & Waste Management Research, Inc. (HSWMR) and have the following comments that need to be addressed:

1. Our copy of the Soil and Groundwater Management Plan was not certified by a Professional Geologist (P.G.) in accordance with Chapter 492, Florida Statutes (F.S.), or a Professional Engineer in accordance with Chapter 471, F.S. This and future submittals must show the Professional certification(s).
2. Please provide the actual computation sheets with Attachment A in establishing the site specific alternative Soil Cleanup Target Level's (SCTLs).
3. As stated in the HSWMR report (dated July 30, 2007) the site specific alternative soil cleanup target level (ASCTLs) were developed only for arsenic. Since no soil removal and disposal is proposed and the data submitted shows that the soil exceeded cleanup target levels found in Chapter 62-777, Florida Administrative Code (F.A.C.), provide alternative cleanup target levels for the other known contaminants dieldrin, toxaphene, and chlordane. Include a discussion of the effects of contaminants dieldrin, toxaphene, and chlordane.
4. Please provide a sampling date for the parameters shown in Tables 1 & 2.
5. Submit a groundwater monitoring plan in accordance with Rule 62-520.600(3a), Florida Administrative Code, (F.A.C.) for review.
6. Please provide a map showing exact locations where the soil samples and groundwater samples were taken.

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Village Commons

7. It is suggested to use the University of Florida Center for Environmental & Human Health Toxicology letter (dated September 27, 2007) recommendations to compute the site specific alternative cleanup target levels, (ie: soil injection rate of 100 mg/kg, a higher the exposure frequency rate, etc.).
8. Provide reasonable assurance that arsenic contaminated soil will not leach into the residential lots. Note spoil Area "B" (shown in Soil Management Plan) is near residential lots.

If you have any questions please call Art Torvela at 561-681-6676.

Sincerely,



Paul Alan Wierzbicki, P.G.
Waste Cleanup Supervisor

PAW/aet

Attachment: University of Florida letter of September 27, 2007

Cc: Ligia Mora-Applegate, (Ligia.Mora-applegate@dep.state.fl.us)
John O'Malley, P.G., Palm Beach County Health Department (john_o'malley@doh.state.fl.us)
Ray Liggins, Assistant Village Manager Royal Palm Beach (rliggins@royalpalmbeach.com)
Alfred J. Malefatto, Esq., Greenberg & Traurig (MalefattoA@GTLaw.com)

September 27, 2007

Ligia Mora-Applegate
Bureau of Waste Cleanup
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Royal Palm Beach Commons

Dear Ms. Mora-Applegate:

At your request, we have reviewed the proposed alternative soil cleanup target levels (SCTLs) for arsenic in soil at the Royal Palm Beach Commons site in Royal Palm Beach, Florida. These alternative SCTLs were developed by HSWMR, Inc. and are outlined in a letter dated July 30, 2007. The former Traditions Golf Course property will be redeveloped into a park to include: a 9 hole golf course, club house, sporting center, central plaza and great lawn for picnics, boating and bike/hike trails. Four scenarios were considered for exposure, including the following: recreational golfer, recreational visitor, maintenance worker, and construction worker. Based on our review, we have the following comments:

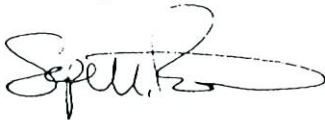
- 1) The alternative SCTL for the golfer is based in part on an assumed incidental soil ingestion rate of 50 mg/day. This is the value that the USEPA recommends for indoor workers (see USEPA, 2002). The recommended soil ingestion rate for an outdoor worker, 100 mg/kg, would be more appropriate for a golfer, in our opinion. Also, the exposure frequency of 72 days per year seems low as an upper-end value for golfers in South Florida. Some additional justification for this assumption is needed, for example, information from a survey of area courses on the frequency of use by avid golfers.
- 2) As the report notes, FDEP has developed and used a recreational exposure scenario for public parks elsewhere that results in a SCTL for arsenic of 5.5 mg/kg. This scenario is based on exposure as a child and adolescent over a 14 year period. We see no reason why this scenario and SCTL should not be applicable to the Royal Palm Beach Gardens site as well. The report states that 92 out of 118 soil samples had arsenic concentrations below 5 mg/kg, so the vast majority of the site may already be below a 5.5 mg/kg cleanup target.
- 3) The alternative SCTL for the maintenance worker is based on a fraction from contaminated source (FC) assumption of 0.5, meaning that only half of the exposure would be to contaminated soil. The report contends this assumption is warranted because asphalt and other pavement will cover large areas of the site. Paving will certainly reduce the area of the site over which direct contact with soil

is possible, but not the fraction of exposed soil that is contaminated. A FC value of 1.0 should be used to develop the SCTL for the maintenance worker.

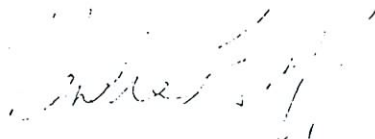
- 4) For the construction worker SCTL, we recommend using $IR=330$ mg/d, $AF=0.3$ mg/cm² (USEPA, 2002). An $ED=1$ is a typical default (USEPA, 1991).
- 5) Under Chapter 62-780, FAC, the use of alternative SCTLs requires consideration of possible additive effects on contaminants. In addition to arsenic, two other carcinogens are also present at the site – dieldrin and toxaphene – and potential additive effects of all three agents need to be addressed. One approach would be to apportion the cleanup targets for these three chemicals such that the total risk is $1 \text{ E-}06$. Alternatively, the need for apportionment could be avoided if dieldrin and toxaphene are removed from the site. For purposes of satisfying Chapter 62-780, this means removing everything above the higher of the detection limit or 1/10 the default SCTL.
- 6) In addition to risk from direct contact with soil, soil is apparently serving as a source of arsenic contamination in groundwater. The report states 17 mg/kg arsenic in soil produces a SPLP leachate at 27 ug/L. We are concerned that the higher soil values (69 mg/kg) found on site may lead to higher groundwater exceedances. In fact, it is clear that leaching in some areas is resulting in very high groundwater concentrations. For example, well MW-W01, sheet 2, already shows an unfiltered arsenic value of 280 ug/L. SPLP data should be analyzed in such a way that a leachability-based cleanup target can be calculated for soil to prevent further groundwater contamination.

Please let us know if you have any questions regarding this review.

Sincerely,



Stephen M. Roberts, Ph.D.



Kendra F. Goff, Ph.D.

References

EPA. 1991. Risk Assessment Guidance for Superfund. Volume I, Human Health Evaluation Manual (Part C, Risk Evaluation of Remedial Alternatives), OSWER Directive 9285.7-01C, Office of Emergency and Remedial Response, Washington, D.C.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Emergency and Remedial Response.