WHITE & CASE

White & Case LLP
Wachovia Financial Center, Suite 4900
200 South Biscayne Boulevard
Miami, Florida 33131-2352

Tel +1 305 371 2700
Fax +1 305 358 5744/5766
www.whitecase.com

Direct Dial + (305) 995-5255 nmcaliley@whitecase.com

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VIA EMAIL AND U.S. MAIL

Geospatial Information Office
U.S. Geological Survey
National Center
Reston, Virginia 20192
Email: InfoQual@usgs.gov

Subject: Complaint About Information Quality

Dear Sir or Madam:

On behalf of the Miami-Dade County Limestone Products Association, Inc. ("MDLPA") and its members,[1] I write to obtain a correction of information disseminated by the U.S. Geological Survey ("USGS") on or about August 27, 2008 related to the Miami-Dade County, Florida Northwest Wellfield ("NWWF"). These materials, which include a press release, contain inaccurate, unsupported, gratuitous, and inflammatory statements regarding public health concerns at the NWWF. The decision to send a press release to hundreds of individuals and media outlets containing these statements suggests that your agency is engaging in public advocacy and policymaking, rather than conducting science. These materials do not meet basic standards of information quality, in violation of the Information Quality Act, 44 U.S.C. § 3516 note, the implementing guidelines of the Office of Management and Budget ("OMB Guidelines"), 66 Fed. Reg. 49718 (Sept. 28, 2001) and 67 Fed. Reg. 8452 (Feb. 22, 2002), and the USGS Guidelines for Ensuring Quality of Information Disseminated to the Public ("USGS Guidelines") (accessible at www.usgs.gov/info-qual/). As discussed below, the MDLPA requests that the USGS forthwith correct the inaccurate and misleading information.

There are several USGS documents that are the subject of this request for correction. On August 27, 2008, the USGS issued a press release entitled "Water Supply at Greater Risk than

[1] The MDLPA is a trade association made up of several companies that have been excavating limestone products in Miami-Dade County for decades. Members of the MDLPA include White Rock Quarries, Cemex Construction Materials Florida LLC, Tarmac America LLC, and Florida Rock Industries. The MDLPA and its members are adversely affected by the USGS materials addressed in this request because the materials contain a series of inaccurate or misleading statements indicating that continued limestone mining activities will increase the risk of contamination of the NWWF. I will serve as the primary contact individual for this request.

Expected" (hereinafter referred to as the "Press Release") (**Attachment 1**). This Press Release is covered by the USGS Guidelines, §§ I and III(1), because it is information produced and disseminated by your agency. The Press Release references four technical papers authored by USGS employees and the internet hyperlinks where those papers may be located. Those papers include:

> Renken, et al., *Pathogen and chemical transport in the karst limestone of the Biscayne aquifer: 1. Revised conceptualization of groundwater flow,* 44 Water Resources Research W088429, doi: 10.1029/2007WR006058 (2008) [hereinafter referred to as "Paper 1"]
>
> Shapiro, et al., *Pathogen and chemical transport in the karst limestone of the Biscayne aquifer: 2. Chemical retention from diffusion and slow advection,* 44 Water Resources Research W08430, doi: 10.1029/2007WR006059 (2008) [hereinafter referred to as "Paper 2"]
>
> Harvey, et al., *Pathogen and chemical transport in the karst limestone of the Biscayne aquifer: 3. Use of microspheres to estimate the transport potential of Cryptosporidium parvum oocysts,* 44 Water Resources Research W08431, doi:10.1029/2007WR006060 (2008) [hereinafter referred to as "Paper 3"]

These papers are the result of investigations that also led to the publication of a previous paper:

> Renken, et al., *Assessing the Vulnerability of a Municipal Well Field to Contamination in a Karst Aquifer,* 11 Envtl. & Engring. Geoscience 319, 320 (2005) [hereinafter referred to as "Paper 4"]

All of these papers are covered by the USGS Guidelines, § III(1), because they are reports by USGS authors.

While the MDLPA welcomes objective science as it relates to the NWWF, which has been studied by multiple entities (including the USGS) since its construction in the 1980s, the USGS Press Release and papers contain statements that go beyond the scope of the agency's investigations, are unsupported by the data, and are inaccurate, misleading, or inflammatory. We are disturbed that the USGS would make such statements. Unless corrected, these materials cause direct harm to the interests of the members of the MDLPA, and not insignificantly, the credibility and generally positive reputation of the USGS in Florida.

The OMB Guidelines issued pursuant to the federal Information Quality Act require that the USGS take steps to ensure that information disseminated by the agency meets basic standards of quality. *See* 66 Fed. Reg. 49723. "Quality," as defined in OMB Guidelines, is an encompassing term referring to the utility, objectivity, and integrity of information. *See id.* at 49724. "Utility" refers to the usefulness of information, which must be considered not only from the perspective of the agency but also from the perspective of the public. *Id.* The "objectivity" is evaluated both from how it is presented, i.e., whether it is presented in an accurate, clear, complete and unbiased manner, and from its substance, i.e., whether it is in fact accurate,

reliable, and unbiased. *Id.* For the reasons provided below, the USGS materials subject to this request for correction fail to meet these standards of quality.

To ensure the objectivity of USGS's review of this request for correction, we ask that this request be reviewed in the first instance by agency personnel with appropriate technical expertise who did not participate in the preparation or review of the Press Release or agency papers identified above. Furthermore, we request the opportunity to meet with the senior reviewer of this request before you complete your review to ensure that any questions regarding our request have been fairly addressed.

I. BACKGROUND

The subject matter of the materials in question is an area of Miami-Dade County, Florida designated as the "Lake Belt" by the Florida Legislature. Fla. Stat. § 373.4149. For approximately 50 years, members of the MDLPA and their predecessors in interest have excavated limestone in this area. *See* http:/lakebeltplan.org/factsheet.htm. In the mid 1980s, Miami-Dade County installed the NWWF in a portion of the Lake Belt, and adopted a local ordinance severely restricting land uses within a large area surrounding the wellfield and also excluding the excavation of new mining lakes within approximately 2500 feet (762 meters) of the production wells. *See* Testimony of Carlos Espinosa, Director of Miami-Dade County Department of Environmental Resources Management, in *Sierra Club v. Strock, et. al.*, Case No. 23427 (S.D. Fla.) (hereinafter referred to as "Espinosa Test.") at 5139 (**Attachment 2**). Mining activities outside this distance have been authorized by permits issued by Miami-Dade County, the Florida Department of Environmental Protection, and the U.S. Army Corps of Engineers ("Corps"). *See* Espinosa Test. at 5089.[2]

In 2002, Miami-Dade County engaged the USGS to conduct technical investigations into two discrete issues relating to the NWWF and Biscayne aquifer. First, USGS was asked to assess transport of solute contaminants and pathogenic protozoa within the aquifer. Second, USGS was asked to examine the importance of straining or other filtration mechanisms that may or may not impede microbial advective movement. *See* Paper 4, at 320. The County's purpose in hiring USGS was to develop technical information to be considered during a three-year review by the Corps of permits issued to mining companies (scheduled for 2005). *See* Espinosa Test. at 5093, 5099-5100. The principal investigations were conducted in 2003 and 2004.[3] Miami-Dade County paid the USGS approximately $700,000 over several years to do this research.[4] *See* Espinosa Test. at 5116.

[2] Permits issued by the Corps have been the subject of long-running litigation brought by the Sierra Club and others who have sought to halt continuation of limestone mining in this area.

[3] Although the permit review was conducted in 2005 and 2006 and the County was given USGS's basic conclusions at that time, Espinosa Test. at 5122-23, 5172-73, the USGS delayed until 2008 to issue all of its papers based on these investigations.

[4] As noted in the Naples Daily News on September 1, 2008, the USGS authors have been proposing similar studies to local governments that are directed toward the limestone mining industry. *See* Attachment 5 ("The [Lee] County Density Reduction/Groundwater Resource committee, which studied mining and other uses in southeast Lee

It is important to note that other information collected for the three-year review and provided to USGS included hundreds of water quality samples collected from mining lakes, nearby groundwater wells, drainage canals, and the County's raw water production wells. The pathogen of interest, *Cryptosporidia parvum*, has never been detected in a sample collected in or around the wellfield. *See* Draft Supplemental Environmental Impact Statement ("DSEIS"), Ch. 3.7 (available at www.lakebeltseis.com).

On August 27, 2008, the USGS issued the Press Release entitled "Water Supply at Greater Risk than Expected." The Press Release apparently was a vehicle to announce the publication of four papers authored by USGS personnel in technical journals as a result of the investigations partially funded by Miami-Dade County. The Press Release and the papers focus on hypothetical risks associated with microbial pathogens such as *Cryptosporidia parvum*, and contain conclusions communicated to County officials in 2005-2006.[5] The Press Release announced that "[s]cientists from the U.S. Geological Survey have concluded that the drinking water from the Miami-Dade Northwest Wellfield is at risk of contamination due to the close proximity of lakes created from limestone rock mining activities."

Not surprisingly, the Press Release triggered several news reports indicating that a federal agency had determined that public drinking water supplies were at risk. *See, e.g.*, NBC6, *Miami-Dade Tap Water 'At Risk for Contamination'* (Aug. 22, 2008) (**Attachment 3**); Curtis Morgan, *Studies: Mine Expansion poses water bug risk,* Miami Herald (Aug. 31, 2008) (**Attachment 4**); Charles Whitehead, *USGS survey raises concerns about miners polluting area drinking water,* Naples Daily News (Sept. 1, 2008) (**Attachment 5**). The headlines were alarming enough that the Miami-Dade Water and Sewer Department – an agency of the same County government that hired USGS to do the studies in the first place — felt compelled to issue a press release indicating that public drinking water supplies are safe. *Miami-Dade Water and Sewer Department Statement Regarding Recent News About Our Drinking Water* (Aug. 28, 2008) (**Attachment 6**).[6]

II. THE PRESS RELEASE VIOLATES FEDERAL GUIDELINES FOR INFORMATION QUALITY

The Press Release does not meet federal guidelines for information quality. The Press Release makes broad and inflammatory statements, such as its title "Water Supply at Greater Risk than Expected" and its statement that "existing and proposed rock mines near the NWWF in Miami-Dade County likely increase the risk of contaminating public drinking water supplies." It also makes policy statements disparaging the adequacy of existing protections of the drinking water supply, asserting that "[c]urrent treatment of water drawn from NWWF production wells is not completely effective in removing these pathogens from the drinking water," and that

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[county], heard from [Robert] Renken in May. He was proposing the same sort of study here as had been done in Miami-Dade [County]. The county opted out of the $450,000 study, at least for now.").

[5] *See* Espinosa Test. at 5122-23, 5172-73 (stating that USGS authors had communicated their conclusions to County employees by summer 2006).

[6] Representatives of the Plaintiffs in the ongoing litigation have used the USGS Press Release and papers as ammunition for their challenge against continued limestone excavation, a point noted in the attached news reports.

"[c]urrent protection zones are not sufficient to protect water supply wells from possible contamination from borrow-pit lakes." These statements are:

- not qualified by the limited scope of the USGS investigations;
- assume investigations that have not been conducted by USGS or others;
- fail to identify other information that would indicate a higher degree of protection of drinking water supplies; and
- fail to disclose the financial compensation received by USGS for its work.

OMB and USGS Guidelines require that information be presented in an accurate, clear, complete, and unbiased manner. *See* 66 Fed. Reg. 49723; USGS Guidelines, § III. The Press Release fails this test.

A. The Press Release Makes Statements That Are Unsupported By Any Technical Investigation Conducted by USGS

The statements in the Press Release imply that USGS conducted a comprehensive review of water quality safety in the NWWF. The statements stated above are broad ("Water Supply at Greater Risk"), address not just physical processes in the aquifer but the effectiveness of water treatment plants, opine on the sufficiency of "current protection zones" to protect water supply wells, and comment on the ultimate issue of whether there is "risk" to public water supplies. In effect if not by design, the Press Release told the general public that public health is at risk. And that is just the way the media treated it in their news reports. *See, e.g.*, NBC6, *Miami-Dade Tap Water 'At Risk for Contamination'* (Aug. 22, 2008).

These statements are misleading. The limitations on USGS's investigations (a series of tracers tests at a single location in a known preferential flow zone approximately 300 feet from a 10 million gallon/day production well and column tests in the laboratory) were not explained in the Press Release. USGS was hired by Miami-Dade County only to try to assess the transport of potential contaminants through groundwater and filtration mechanisms in the aquifer. USGS did not conduct the investigations necessary to reach the conclusions in the Press Release, nor (as discussed below) does such evidence exist. Thus, the Press Release fails to meet the basic requirement of accuracy. *See* 66 Fed. Reg. 49724; USGS Guidelines, § III.

1. USGS Opined on Risk to Drinking Water Supplies Without Conducting a Risk Assessment and Without Following Statutory Standards Under the Safe Drinking Water Act

USGS did not conduct a risk assessment of the potential threat to public drinking water supplies associated with limestone mining. Miami-Dade County hired a separate consultant – CH2MHill – to prepare a risk assessment. *See* Espinosa Test. 5105, 5108, 5117-18. It is misleading for USGS to trumpet, without basis, an alleged "increase [in] the risk of contaminating public drinking water sources" when it did not conduct a risk assessment. In

2008, there is certainly nothing new that suggests a different risk than was known to County officials in 2005 and 2006.

The assertions about health risk violate USGS and OMB Guidelines regarding information quality. The OMB Guidelines (which are incorporated by reference in the USGS Guidelines), provide that:

> "With regard to analysis of risks to human health, safety and the environment maintained or disseminated by the agencies, agencies shall either adopt or adapt the quality principles applied by Congress to risk information used and disseminated pursuant to the Safe Drinking Water Act Amendments of 1996 (42 U.S.C. § 300g-1(b)(A) & (B))."

OMB Guidelines, § V(3)(C), 67 Fed. Reg. at 8459. The section of the Safe Drinking Water Act referred to in the OMB Guidelines is entitled "Risk assessment, management, and communication," and provides in relevant part the following regarding public information:

> "(B) Public information
>
> In carrying out this section, the Administrator shall ensure that the presentation of information on public health effects is comprehensive, informative, and understandable. The Administrator shall ... specify, to the extent practicable –
>
> (i) each population addressed by any estimate of public health effects;
>
> (ii) the expected risk or central estimate of risk for specific populations;
>
> (iii) each appropriate upper-bound or lower-bound estimate of risk;
>
> (iv) each significant uncertainty identified in the process of the assessment of public health effects and studies that would assist in resolving the uncertainty; and
>
> (v) peer-reviewed studies known to the Administrator that support, are directly relevant to, or fail to support any estimate of public health effects and the methodology used to reconcile inconsistencies in the scientific data."

42 U.S.C. § 300g-1(b)(3)(B).

To the extent that they opine on public health risks, the USGS Press Release, and the underlying papers, do not meet these standards for the "presentation of information on public health effects." They do not identify "the expected risk or central element of risk" or the "appropriate upper-bound or lower-bound estimate of risk." The documents do not identify any "scientific uncertainty identified in the process of the assessment of public health effects." Most importantly, the Press Release does not identify "peer-reviewed studies . . . that . . . are directly relevant to, or *fail to support* any estimate of public health effects" (emphasis added). Congress demanded this level of precision under the Safe Drinking Water Act to avoid unnecessary public

fear and alarm. USGS's decision to make sweeping, unsupported statements about health risk violates this Congressional directive.

2. The Press Release Asserts that Current Protection Zones Are Inadequate Without Examining All Mechanisms that Remove Microbial Pathogens

The Press Release asserts that "[c]urrent protection zones are not sufficient to protect water supply wells from possible contamination from borrow-pit lakes." This assertion violates the OMB Guidelines regarding the objectivity of information in the Press Release because the USGS did not investigate all mechanisms that remove microbial pathogens before they could ever, hypothetically, reach a water supply well.

First, the USGS did not examine mechanisms in the mining lakes themselves that remove microbial pathogens, including inactivation and natural die-off over time through exposure to the relatively high ambient temperatures in South Florida, and precipitation processes that would trap pathogens in bottom sediments. In 2000, EPA recognized some of these mechanisms in the mining lakes, *see* EPA Water Quality Evaluation, May 2000 (available at www.lakebeltseis.com). Dr. Joseph Cotruvo, an internationally-recognized drinking water expert, has estimated conservatively that these mechanisms alone would account for 4 logs of removal for *Cryptosporidia*, assuming they were present in the quarry lakes (they have yet to be detected in mining lakes). *See* July 2007 Assessment of Consequences of Mining Activities in the vicinity of the Northwest Well Field, Miami-Dade County, prepared by Joseph Cotruvo & Associates, LLC ("Cotruvo Report") at 19 (**Attachment 7**).

Second, USGS has not estimated the die-off of microbial pathogens as they travel through the groundwater in the mining setback. The existing mining setback is approximately 2500 feet/762 meters. Investigations have revealed different rates of groundwater movement in different parts of the Biscayne aquifer near the NWWF, with locations closest to the production wells and/or in a preferential flow zone showing the highest velocities and locations further from the wells showing much slower velocities. *See* Paper 4, table 1. It is well accepted that pathogens die-off over time, with higher die-off rates at higher temperatures. Cotruvo Report, at 11-13. Even assuming that USGS's tracer studies, conducted within 100 meters of one of fifteen production wells, represent average conditions in the mining setback area (the data show they do not) and groundwater takes only 15 days to flow from the closest active mining lake to a production well, there would still be at least a 0.5-log reduction in *Cryptosporidia* as a result of die-off in the groundwater. *See id.* at 12 (illustrating different die-off rates based on various assumptions). To the extent that average groundwater travel times are longer (which is consistent with the slower velocities found at locations further from the production wells), more die-off would occur in the groundwater.[7]

Since USGS did not examine the removal mechanisms for microbial pathogens and ignored the science that those mechanisms collectively eliminate *Cryptosporidia* by many logs,

[7] There are still other mechanisms not studied or referenced by USGS that would reduce potential levels of *Cryptosporidia* that could arrive at the production wells. *See generally* Cotruvo Report.

the assertions in the Press Release that the current protection zones do not meet federal standards violates USGS's obligation to provide the public with objective information.

> "'Objectivity' includes whether disseminated information is being presented in an accurate, clear, complete, and unbiased manner. This involves whether the information is presented within a proper context. Sometimes, in disseminating certain types of information to the public, other information must also be disseminated in order to ensure an accurate, clear, complete, and unbiased presentation."

OMB Guidelines, § V(3)(a), 67 Fed. Reg. at 8459. The USGS failed to include this highly relevant information, which contradicts the USGS's headline assertion that there is a risk of contamination of public drinking water supplies.

3. USGS Asserts Risk of Contamination Without Disclosing that the Relevant Contaminants Have Never Been Detected in the NWWF

The Press Release also is misleading in that it asserts that there is "risk" of contamination to public drinking water sources that will "increase" due to mining lakes, without explaining that the target contaminant has never been detected in the mining lakes. The Press Release and technical papers focus on the chance that *Cryptosporidia* could enter the public drinking water supplies. However, the Press Release fails to state that *Cryptosporidia* has never been detected in the mining lakes despite years of sampling. *See* DSEIS, Ch. 3-59. It is misleading to assert that there is an "increase[ing]" risk of contamination when the contaminants have never been found in the area.[8] This omission also violates the requirement that agency information be presented in an objective way.

B. USGS Incorrectly Asserts that Existing Treatment Processes in the Water Treatment Plants Will Not Remove Microbial Pathogens

The Press Release states that "[c]urrent treatment of water drawn from NWWF production wells is not completely effective in removing these pathogens from the drinking water," and Paper 1 (at page 2) states that "[c]urrent treatment of water withdrawn from the production wells of the NWWF is not sufficient to remove water-borne pathogens, in particular, *Cryptosporidia parvum* oocysts."[9] The USGS papers make these assertions without citing any supporting authority. Nor, to our knowledge, has USGS ever evaluated the effectiveness of the treatment methods in the water treatment plants of Miami-Dade County to remove microbial pathogens.

[8] An objective scientist would have wondered why this was the case and, upon further research, should have learned that natural mechanisms exist to eliminate *Cryptosporidia.*

[9] These statements are hampered by use of the imprecise and unscientific phrase "completely effective." EPA does not refer to "completely effective" treatment technologies. Instead, EPA specifies the minimum performance of a technology and drinking water rules determine the extent of the technology that is required and the turbidity level in the finished water that demonstrates performance.

In fact, evidence demonstrates that existing treatment processes would remove microbial pathogens hypothetically present in raw water supplies to meet any potentially applicable water quality standard. The water treatment plants include a lime softening and filtration treatment process, a point acknowledged in Paper 3 (page 2). The U.S. Environmental Protection Agency ("EPA"), in its LT2 Surface Water Treatment Rule, recognizes that lime softening is an accepted treatment method recognized to remove up to 3 logs of *Cryptosporidia* oocysts. *See* 40 CFR Parts 9, 141 and 142. Initial investigations by Dr. Cotruvo indicate that, based upon turbidity of finished water, the plants treating water from the NWWF likely qualifies for the 3-log removal credit for *Cryptosporidia* that EPA allocates to single-stage lime softening. *See* Cotruvo Report at 17, 19. Given the failure to detect *Cryptosporidia* in the mining lakes, even if the NWWF source was classified as groundwater under the direct influence of surface water under the LT2 Rule (which it is not), only the lowest level of treatment (Bin 1) would be required according to the rule and lime softening would satisfy that standard. *Id.* at 17; 40 CFR Parts 9, 141 and 142. Indeed, EPA recently acknowledged that the probability of migration of *Giardia* and *Cryptosporidia* to the wells was low and that the existing water treatment plants that treat water from the NWWF likely would remove microbial pathogens. *See* Letter from James D. Giattina, Director, Water Management Division, EPA Region IV, to Col. Paul Grosskruger (Aug. 14, 2008) (**Attachment 8**). The statements in the Press Release and in Paper 1 therefore mislead the public on the efficacy of treatment methods currently in place at the water treatment plants.

C. Even if Straining in the Aquifer Were the Only Method of Removing Pathogens, USGS Data Does Not Support the Assertions in the Press Release Regarding the Adequacy of Current Mining Setbacks

Even assuming that straining or other filtration mechanisms in the Biscayne aquifer are the only mechanism to prevent contamination of the drinking water wells, the technical conclusions in Paper 3 do not support the imprecise and gratuitous statement in the Press Release that "[c]urrent protection zones are not sufficient to protect water supply wells from possible contamination from borrow-pit lakes."

In Paper 3, the USGS authors, state (at page 1) that "it may take 200-300 meters of transport to ensure even a 1-log unit removal of oocysts." As discussed below, this conclusion is not supported by USGS's own data and is based on invalid assumptions and errors in the study. However, even assuming that this is a correct estimate of removal through straining mechanisms (and a very conservative linear extrapolation at greater distances from the wellfield), the current 762 meter protection zone would remove 2.5 to 3.8 logs of *Cryptosporidia* through straining processes alone. Given that the NWWF would be in Bin 1 under EPA's LT2 Rule (if the rule were, hypothetically, applicable), the existing mining setback alone provides sufficient removal capacity to protect water supply wells from possible contamination. The assertion in the Press Release therefore is not supported by the technical conclusions in Paper 3.

D. The Press Release's Statement That Risks Are "Greater Than Expected" Is Misleading

The title of the Press Release, "Water Supply at Greater Risk Than Expected," leads the public to believe that regulatory agencies charged to protect the water supply have failed to carry

out their duties.. The USG Papers, while newly published in 2008, are based on investigations conducted years ago. The USGS's test results were provided to Miami-Dade County in 2004, and were the basis of the preliminary decision by county regulators to increase water treatment if necessary rather than expand mining setbacks. *See, e.g.,* Espinosa Test. at 5122-23, 5172-73. In addition, the U.S. Army Corps of Engineers issued a draft Supplemental Environmental Impact Statement that discusses the initial findings by USGS in its assessment of the risks of continued mining to the NWWF. *See* www.lakebeltseis.org, Ch. 3.7 and 4.7. The USGS papers addressed in this request, while newly published in 2008, are based on investigations conducted in 2003 and 2004, the results of which have been known to regulators for years. In this context, the Press Release's announcement that "Water Supply [is] at Greater Risk Than Expected" suggests that Miami-Dade County and the Corps have not already considered USGS's test results. That is both untrue and misleading.

E. The Press Release and Technical Papers Suggest a Lack of Scientific Neutrality on the Part of the USGS

It is the mission of USGS to provide "unbiased" information to the public and to decision makers. USGS Guidelines, § III(1). As recognized in the U.S. Geological Survey Manual, Policy 500.5, § 1(B), "[t]he USGS reputation for science excellence is based, in large part, on its neutrality and the unbiased and impartial nature of its information. All USGS products, materials, and communications with the media must remain neutral and not advocate, persuade, advise, recommend, sanction or prescribe actions."

The statements made in the Press Release draw into question the neutrality of USGS investigators regarding limestone mining and the NWWF. On its face, the Press Release advocates for specific policy responses by regulatory agencies: after (incorrectly) stating that "current protection zones are not sufficient," that "current treatment [in water treatment plants] is not sufficient," and that "existing and proposed rock mines near the NWWF in Miami-Dade County, Florida likely increase the risk of contaminating public drinking water sources," the Press Release concludes that "[t]hese findings will be used to support future water-management and land-use decisions." This is advocacy over matters of policy reserved for other agencies, which is barred by USGS' own manual.

As troubling is the slanted and misleading nature of USGS's policy advice. As noted above,

> (a) USGS makes its policy recommendations based on incorrect technical assertions (e.g., that the pathogens actually exist in this area, that natural mechanisms are insufficient to remove potential pathogens before reaching production wells, and that the water treatment plants would not provide adequate treatment for such pathogens),
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> (b) makes technical assertions that go beyond the scope of the agency's investigations (e.g., opines public health risk without

preparing a risk assessment or otherwise following Safe Drinking Water Act procedures), and

(c) fails to mention facts which are inconsistent with any theory of risk (e.g., that after many years of sampling, *Cryptosporidia* have not been detected in the mining lakes).

USGS did so in a Press Release that was broadcast to hundreds of individuals and media outlets, predictably triggering widespread reports in the media that regulatory agencies have failed to adequately protect public health. The public does not expect such bias from the USGS, an agency previously known for its nonpartisanship. In these circumstances, the MDLPA can only conclude that USGS -- or at least certain of its employees -- is not impartial on the subject of limestone mining.

Finally, the Press Release and papers do not disclose the fact that the USGS was paid by Miami-Dade County to conduct the investigations. Recent news reports also have indicated that USGS has been seeking to have other county governments pay the agency to conduct similar investigations near other limestone quarries. *See* Attachment 5 ("The [Lee] County Density Reduction/Groundwater Resource committee, which studied mining and other uses in southeast Lee [county], heard from [Robert] Renken in May. He was proposing the same sort of study here as had been done in Miami-Dade [County]. The county opted out of the $450,000 study, at least for now."). The USGS should have disclosed the financial relationship with Miami-Dade County and USGS's attempts to obtain additional funds from local government, because it is relevant to the public's consideration of the objectivity and motivations behind the agency's investigations and public statements.

III. THERE ARE SIGNIFICANT FLAWS IN THE UNDERLYING TECHNICAL PAPERS

The USGS Papers contain a series of false statements and technical errors in violation of OMB and USGS Guidelines. *See* 66 Fed. Reg. 49724; USGS Guidelines, § III. The technical flaws are outlined in a Technical Memorandum prepared by the Ozark Underground Laboratory ("OUL") (**Attachment 9**).[10] In the interests of brevity, the primary errors identified by the Ozark Underground Laboratory are only summarized here; the memorandum is incorporated by reference. In addition to these technical flaws, the USGS Papers make inaccurate statements of fact in their introductory and concluding discussions which are not based on agency investigations.

A. The Results of the Field and Laboratory Tests Described in Paper 3 Were Biased Due to Flaws in the Study Design

The tests described in Paper 3, in which investigators introduced microspheres and treated *Cryptosporidia* oocysts into limestone columns in a laboratory and in the case of microspheres, also into a preferential flow zone near one of the production wells in the NWWF,

[10] The OUL and its president, Thomas Aley, are recognized authorities in the field of groundwater investigations through the use of tracers. In fact, Paper 1 cites as an authority a previous study prepared by Mr. Aley in the 1980s.

underestimated removal rates due to flaws in the study design. First, excessive quantities of treated oocysts and microspheres were introduced into a single rock core simultaneously in the laboratory, which reduced the natural adsorptive capacity of the rock in a way that would never happen in the field. Second, the use of excessive quantities of microspheres in the field test would have reduced, if not saturated, the natural adsorptive capacity of the surfaces along the preferential flow route tested to a degree that could not occur with the size of the buffer zone around the wells in the Northwest Wellfield. Third, the adsorptive capacity of the aquifer materials in the field-scale test was very likely diminished by previously introducing large quantities of rhodamine WT dye in the exact same preferential flow pathway resulting in an underestimation of the removal capacity of the aquifer. The lack of even a cursory discussion of these problems indicates a troubling lack of care or expertise on the part of those who designed the study and interpreted the results.

B. The Conclusions in Paper 3 Regarding the Removal Capacity of the Aquifer Are Inconsistent With the Data

Paper 3 states (at page 1) that "[t]he field and laboratory results collectively suggested that it may take 200-300 meters of transport to ensure even a 1-log unit removal of oocysts." The actual field and laboratory results indicate much higher levels of removal. Since oocysts were not tested in the field, the authors presumably tried to use the relationship between microsphere and oocyst removal in the lab core and apply it to the microsphere removal in the field test to yield an estimate of oocyst removal in the field. Even though both the lab and the field tests have the serious flaws noted above, the results do not support the 200-300 meter statement. The same lab core that removed approximately 96% of the microspheres removed 81% of the inactivated oocysts. Applying this ratio to the field tests, where the microspheres experienced 1 log removal in less than 97 meters, 1-log removal of the inactivated oocysts would be accomplished in 105 meters, not 200-300. The conclusion in Paper 3 therefore is inconsistent with the data collected and even ignores the serious experimental design flaws that should disqualify the results of both the lab and field tests.

C. Papers 1 and 4 Fail to Acknowledge Errors in the 2003 Dye Tracing Test

Papers 1 and 4, which describe a dye tracer test in 2003, fail to acknowledge the errors made in conducting the test. In 1998, Miami-Dade County successfully performed a dye tracer test using less than 7 ounces of dye 450 feet from a production well. For some reason, in 2003 USGS moved closer to the production well (only 330 feet) and used more than 100 pounds of dye for the test. Not only was this unnecessary, it resulted in the county's finished water supply turning pink, caused Miami-Dade County to shut down the production well, and resulted in public alarm. This error indicates a lack of experience and understanding by USGS investigators in the area of groundwater dye tracing. Again, no recognition that the extreme overdosing of the flow path could have significantly affected the recovery percentage of the dye was ever expressed.

D. Paper 3 Fails to Provide Context to Statements Regarding Presence of *Cryptosporidia*

Paper 3 makes statements regarding the presence of *Cryptosporidia* oocysts in the NWWF which are false or misleading. On pages 1-2, the paper states "*C. parvum* oocysts are ubiquitous in surface waters throughout much of North America [e.g., *LeChevalier et al.*, 1991]. Consequently, shallow, karst limestone aquifers hydraulically connected to surface waters, such as the Biscayne aquifer in southeastern Florida, may be particularly vulnerable to contamination by oocysts." Just a few sentences later, the paper states that "the potential for transport of *C. parvum* oocysts through the Biscayne aquifer remains a significant public health concern." These statements imply, if not affirmatively indicate, that *Cryptosporidia* are present in the immediate vicinity of the NWWF.

These statements are not supported by the data and are inappropriate in this context. The LeChevallier reference did not involve any empirical data from southeastern Florida (or any other area of the state).[11] Moreover, years of water quality sampling and analysis in the vicinity of the NWWF has failed to detect any *Cryptosporidia* oocysts. *See* SDEIS, Ch. 3.7. Specifically, the MDLPA sampled the mining lakes for three years from 2002-2005 and Miami-Dade County sampled nearby canals and ponded water within the wellfield from 2002-2008. *Cryptosporidia* was not detected in these samples. Miami-Dade County also has tested NWWF production wells and monitoring wells for years and has failed to find any *Crytosporidia*. *Id.* We believe that at least some of the authors of Paper 3 were aware of this monitoring data, a belief that we ask you to confirm.

Moreover, *Cryptosporidia* oocysts found in surface waters are frequently the result of discharges from upstream wastewater treatment facilities, such as occurred in the well-known Milwaukee outbreak. There are no sewage waste discharges in or anywhere near the lakes in the NWWF area, due in part to the fact that mining companies own the land, and the county's wellfield protection plan has been in place successfully for many years. Cotruvo Report, at 4-5. In addition, as noted above, pathogens such as *Cryptosporidia* die-off much sooner in the warm waters of South Florida than in colder areas of the country.

It therefore is misleading for Paper 3 to state that Cryptosporidia is "ubiquitous" and that the Biscayne aquifer is "consequently" "particularly vulnerable." This statement fails to meet minimum standards for data quality, because it is both incorrect and fails to provide a proper context for the information.

E. Paper 3 Identifies a Protection Factor Which is Unsupported by Law or Policy

Paper 3 makes a policy statement regarding a desired level of removal for *Cryptosporidia*, specifically (on page 10) that "[f]or *C. parvum* oocysts, which are capable of causing disease in very low numbers, it is desirable to have 4-5 log(10) units of removal between

[11] While Paper 3 (at pages 1-2) specifically references LeChevallier, et. al., *Giardia and Cryptosporidium spp. in Filtered Drinking Water Supplies*, 57 Applied and Envtl Microbiology 9, 2617-21 (1991), the sampling sites for this article, none of which are located in Florida, are actually identified in another article regarding the same sampling results, *see* LeChevallier, et. al., *Occurrence of Giardia and Cryptosporidium spp. in Surface Water Supplies*, 57 Applied and Envtl Microbiology 9, 2610-16 (1991).

contaminant source and well." The paper cites no supporting authority for this assertion.[12] The assertion is inconsistent with EPA's LT2 Surface Water Drinking rule. That rule establishes levels of treatment for *Cryptosporidia* for water supplies obtained from surface waters or groundwater under the direct influence of surface water. Levels of treatment vary depending on the amount of *Cryptosporidia* present in source waters, varying from 2 logs removal from waters with low to undetectable levels of *Cryptosporidia* to 3 logs to 5.5 logs of removal from surface waters with more than 3 oocysts per liter (>300 *Cryptosporidia* per hundred liters). 40 CFR Parts 9, 141 and 142.

Cryptosporidia has never even been detected in the NWWF using EPA-specified analytical techniques. Even if the NWWF were, hypothetically, determined to be "groundwater under the direct influence of surface water," based on the historic sampling data, the EPA rule would require 2 logs of additional removal. The highlighted statement in Paper 3 not only ignores EPA's rule, but asserts a level for removal that is significantly higher than required under the Safe Drinking Water Act. In the absence of a statement that this conclusion is the opinion of the paper's author, and the basis for that opinion, and that it is inconsistent with EPA's regulations, this statement is false and misleading.

F. Paper 3 Contains Incorrect Information Regarding Ongoing Mining Activities

Paper 3 (at page 2) states that "[t]he proposed expansion of extractive limestone-mining activities in the immediate vicinity of the Northwest well field (NWWF) has attracted widespread attention [*Renken et al.*, 2005] because the resulting borrow pit lakes bring potentially contaminated surface waters within close proximity of Florida's largest municipal well field, in some cases within a few hundred meters." This statement is misleading. As indicated above, local ordinances restrict the excavation of new lakes within approximately 2500 feet/762 meters of the production wells. Espinosa Test. at 5139. The only lake within "a few hundred meters" of the production wells is one that predates the construction of the NWWF in the 1980s. *See* Paper 4, at 320 ("Some existing borrow-pit lakes are within 247 m (810 ft) of production wells"). The statement is misleading in that it suggests that limestone companies seek to excavate new lakes "within a few hundred meters" of the NWWF.

[12] Paper 4 does state (at page 322) that "Miami-Dade County is reviewing rock-mine setback distances that achieve a 3.5 to 4.5 log (logarithmic) reduction in concentration of the pathogen *Cryptosporidim parvum*." This reduction target was identified in 2001 by another consultant hired by Miami-Dade County, CH2MHill, which estimated that a 3.5 log reductions would be appropriate if the mining lakes contained little to no *Cryptosporidia*, and 4.5 log reductions would be appropriate if the lakes have fewer land use controls that would allow large quantities of *Cryptosporidia*. CH2MHill, *Risk Assessment and Groundwater Modeling of the Miami-Dade Northwest Wellfield* 2-6 (Oct. 2001). These reduction targets pre-dated EPA's LT2 Surface Water Rule (issued in 2006). CH2MHill also assumed that there are no treatment mechanisms in the water treatment plants and that there were no removal or inactivation mechanisms in the mining lakes themselves. It is unclear whether the statement in Paper 3 is based on CH2MHill's risk assessment, since Paper 3 does not include the CH2MHill publications among its references, and the fact that Paper 3's estimate of 4.5 log reduction target is the high end of CH2MHill's range. However, in light of the updated information available since CH2MHill issued its initial report in 2001 and Paper 4 was issued in 2005, USGS should not now be relying on these materials. If anything, USGS should rely on EPA's reduction target reflected in the LT2 rule, which is "designed to protect public health by lowering the level of infectious *Cryptosporidium* in finished drinking water to less than 1 oocyst per 10,000 liters." 71 Fed. Reg. 654, 658 (Jan. 5, 2006).

This statement also is misleading because it ignores benefits that the lakes may provide to drinking water supplies. EPA's water quality assessment of the Lake Belt area issued in 2000 concluded that an increase in open water may be beneficial to the water supply, and that "no differences in general water quality could be attributed to the various mining companies" and that calcite precipitation in the mining lakes "likely provide for transformation of suspended microorganisms to bottom sediments, where their viability is naturally eliminated." EPA Water Quality Evaluation, May 2000 at 27, 33-34 (available at www.lakebeltseis.com).

IV. USGS SHOULD CORRECT THESE AGENCY MATERIALS

USGS has unnecessarily alarmed the public through its inaccurate, misleading, and inflammatory press release and unsupported and inappropriate statements in its technical publications. Based on the overreaching statements in the Press Release and numerous shortcomings in the underlying papers, and the agency's failure to follow its own guidelines regarding information quality, the MDLPA questions the objectivity of the USGS' investigations.

To correct the record, we request that the USGS retract the Press Release, correct the misstatements contained therein, and explain the limitations on the data from USGS's investigations in the NWWF in a subsequent release. Further, we request that USGS fully disclose all data sources relied upon for the information disseminated in the Press Release.

Regarding the technical publications, we recognize that since they have already been published the available options to correct the record are limited. At a minimum, if an objective review of the papers in light of comments contained in this letter and attachments confirms that errors and misstatements have been made, we expect to see the record officially corrected. If the flaws to the study are as serious as we perceive them, USGS should seriously consider a new, more appropriate set of experiments to provide results that can be relied on by the people of Miami-Dade County, or in the absence of that, refunding the County funds collected for this work.

* * *

Thank you for considering our request to correct the record in this matter. As indicated above, we respectfully ask to meet with senior managers reviewing our request. Given the seriousness of the flaws identified in the USGS Press Release and Papers, we would appreciate your immediate attention to the matters raised in this letter.

Sincerely,

Neal McAliley

NM:feb