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**RE: Advanced Notice of Proposed Rulemaking (ANPR) for Greenhouse Gases Under the  
Clean Air Act, EPA-HQ-OAR-2008-0318-0117[ANPR]**

**From:** S. Fred Singer, PhD, Non-Governmental International Panel on Climate Change (NIPCC)

On behalf of NIPCC and its 24 Contributing Scientists, I make the following Comment related to some of the 5 issues raised in the ANPR and Endangerment Technical Support Document (TSD):

1. *EPA seeks comment on the best available science for purposes of the endangerment discussion, and in particular on the use of the more recent findings of the U.S. Climate Change Science Program.*
2. *EPA invites comment on all issues relevant to making an endangerment finding, including the scientific basis supporting a finding that there is or is not endangerment under the CAA.*
3. *EPA also invites comment on the extent to which it would be appropriate to use the most recent IPCC reports, including the chapters focusing on North America, and the U.S. government Climate Change Science Program synthesis reports as scientific assessments that could serve as an important source or as the primary basis for the Agency's issuance of "air quality criteria."*
4. *EPA requests comments on the issuance of "air quality criteria" following listing, as well as the adequacy of the available scientific literature [synthesis reports such as the Intergovernmental Panel on Climate Change's Fourth Assessment Report and various reports of the US Climate Change Science Program]*
5. *The Endangerment Technical Support Document provides "evidence" that the U.S. and the rest of the world are experiencing effects from climate change now.*

In this Comment we concentrate on the TSD Section 5 "*Attribution of Observed Climate Change to Anthropogenic Greenhouse Gas Emissions at the Global and Continental Scale.*" Since it follows the line of argument of the UN's IPCC (IPCC) and the US Climate Change Science Program (CCSP), we actually critique the IPCC report itself as well as the CCSP.

## **What is the NIPCC?**

NIPCC is what its name suggests: an international panel of 24 *nongovernmental* scientists and scholars from 15 countries who have come together to understand the causes and consequences of climate change. The credentials of the NIPCC Contributors exceed those of the “expert reviewers” of the EPA’s TSD. Because we are not predisposed to believe that climate change is caused by human greenhouse (GH) gas emissions, we are able to look at evidence the IPCC ignored. Because we do not work for any governments, we are not biased toward the assumption that greater government regulation is necessary to avert imagined catastrophes. Nor are we dependent on government funding for our livelihood.

*What was our motivation?* It wasn’t financial self-interest: No grants or contributions were provided or promised in return for producing the report. It wasn’t political: No government agency commissioned or authorized our efforts, and we do not advise or support the candidacies of any politicians or candidates for public office. Our motivation is solely a desire to supply sound science information to decision-makers and to the public.

## **Summary of Principal Comments**

We contrast the title of TSD Section 5 “*Attribution of Observed Climate Change to Anthropogenic Greenhouse Gas Emissions at the Global and Continental Scale*” with the NIPCC Report “*Nature, Not Human Activity, Controls the Climate*” [Singer et al 2008], which responds to the claims of the UN-IPCC. We submit a copy of this document for the EPA record (link: [http://www.sepp.org/publications/NIPCC\\_final.pdf](http://www.sepp.org/publications/NIPCC_final.pdf) ).

This is indeed the key issue: How to decide whether the cause of global warming is primarily natural (and therefore unstoppable) or whether anthropogenic greenhouse gases are responsible. This is at the core of the “endangerment finding.”

If the cause is non-anthropogenic, as the evidence presented by NIPCC demonstrates, then any attempt to control emissions of CO<sub>2</sub> is pointless and ineffective in influencing climate.

## **Discussion of the Evidence – Natural vs Human:**

The crucial question is: Is warming (predominantly) due to natural or human causes? How can one tell? The issue is of obvious importance since natural causes cannot be influenced in any way by policies that limit greenhouse (GH) gas emissions, such as CO<sub>2</sub>. Resolving the question is a difficult scientific task. Natural causes are plausible; the climate has been warming and cooling for billions of years on many different time scales [See, e.g., Singer and Avery 2007]. On the other hand, GH warming is also plausible, since the concentration of GH gases has been increasing due to human activities.

Since the major (anthropogenic) greenhouse gas, carbon dioxide, is globally distributed, we need to determine whether the observed rise in CO<sub>2</sub> (mainly due to burning of fossil fuels to generate energy) can produce the kind of warming trends calculated by greenhouse models. The key parameter is the so called “climate sensitivity (CS),” usually defined as the increase of global

mean surface temperature (GMST) produced by a doubling of global CO<sub>2</sub> concentration. The NIPCC and other independent scientists suggest values of about 0.5 C or even lower, far below those of the IPCC.

Published IPCC models give differing values of CS, usually ranging between 1.5 and 4.5 degC. It has become evident that these differences result from different ways in which computer models are parameterized. Depending on assumed parameter values, the climate sensitivity can even be lower than 1.5 and can range up to 11.5 C. These models are the basis of the “evidence” that EPA relies on in the Endangerment Technical Support Document.

### ***The Evidence does not support AGW (Anthropogenic Global Warming)***

The question then arises about the validity of such model results, which has to be established through a comparison with observations. But observed temperature trends of the past 100 years are sometimes positive (1920-1940) and sometimes negative (1940-1975, and also since 1998), in spite of increasing CO<sub>2</sub> trends. Clearly, one cannot reproduce the observed temperatures simply by using pure greenhouse (GH) models. As a result, the IPCC (and the CCSP) have attempted to reproduce the observed temperature history of the 20<sup>th</sup> century by using a combination of GH gas forcing, aerosol and ozone forcing, and some natural forcing (which includes volcanoes and Total Solar Irradiance -- TSI). There are at least four problems with this procedure, which makes it unsuitable for validating climate models and for using such model results to justify “endangerment”:

1. Agreement between model results and GMST, the observed temperature history of the 20<sup>th</sup> century, can only be achieved by choosing the right adjustable parameters for these major anthropogenic and natural forcings. This clearly becomes an exercise in “curve fitting” and nothing more. While a suitable choice of parameters may fit the global temperature data, the same choice does not fit the northern hemisphere and southern hemisphere separately.
2. The procedure concentrates on GH gases but ignores other possible important human influences, such as changes in surface albedo and evaporation -- from agriculture and deforestation and reforestation -- and also from biomass burning, from urban heat islands, and from major pollution, like the Asian “brown cloud.”
3. An even more serious problem is the inadequate way in which models handle water vapor, the most important GH gas -- and especially the properties and distribution of clouds. Most differences in CS between models arise from cloud microphysics factors and choice of cloud parameters. This can be seen from the poor way in which models handle precipitation. Even more important, while all models incorporate a positive feedback from water vapor (WV), observational results suggest that the feedback is actually negative and thus cancels some of the warming from GH gas increases.
4. Finally, the IPCC and the CCSP have ignored what is perhaps the major natural forcing, resulting from changes in solar activity. Investigations of paleo-temperatures, for example in stalagmites, have established without doubt a detailed correlation between temperature and cosmic-ray intensity (which in turn is modulated by changes in solar activity). But under the

category of “solar forcing” the IPCC and the CCSP consider only changes in TSI, which are too small to be important.

### ***The “Fingerprint Method” Evidence against AGW***

Having disposed of this method of validating climate models, one falls back on the so called “fingerprint method,” which compares the patterns of tropospheric temperature changes calculated from GH models with observed patterns in the tropical region. Such a comparison is carried out in CCSP Report SAP-1.1[Karl 2006] and has been further elaborated in a research paper by Douglass et al. [International Journal of Climatology, Royal Meteorological Society, online Dec. 2007]. The demonstrated disagreement between modeled and observed atmospheric trends forms the basis for the NIPCC conclusions (see NIPCC figures 7,8,9,and 10). The ***Appendix*** presents the history of this problem in some detail.

### **Conclusion:**

We conclude, therefore -- contrary to the assertions of the EPA Endangerment Technical Support Document -- that climate sensitivity must be well below the values quoted by climate models, and that any estimates of future warming based on such models are neither reliable nor usable by any US government agency for policy purposes. (This caveat applies also to the MAGICC model developed by Tom Wigley for the EPA because it relies on Climate Sensitivities extracted from the IPCC.)

**Another way of putting our result: The evidence clearly shows that the increase in CO2 has not produced a detectable increase in global temperature.**

We believe that this is the strongest argument against the EPA’s attempt to treat carbon dioxide as a pollutant under the Clean Air Act.

## APPENDIX

### History of “Fingerprint” Method

The technique for identifying an anthropogenic influence on climate, as agreed to by everyone, is the “fingerprint” method, which compares the pattern of temperature trends calculated from GH models with the pattern observed in the troposphere. The first application of this method may have been by Santer et al in IPCC-SAR [1996]. However, Santer misapplied the method in order to force the conclusion that warming was due to human causes, namely GH gases.

In one attempt, he compared the geographic pattern of surface temperature trends, derived from GH models, with the observed pattern. He calculated a “pattern correlation coefficient” and claimed that it was increasing with time “as the human signal emerged from the background noise of climate variability” [IPCC-SAR, 1996, chapter 8]. However, when the graph there is compared to the one in his original publication [Santer et al 1995], one discovers [Singer 1997] that he had removed all of the trend lines, including zero and negative trends, except the one that suggested an increasing correlation in the last 50 years. When questioned about this by e-mail, he replied that this was done for “pedagogic reasons.” Santer also made significant text changes in Chapter 8 of the IPCC-SAR report, after its approval by coauthors. See discussion by Singer et al [Bull. AMS 78:81-82, 1997], and E. Masood [Nature 381:039, 1996]

Santer’s second attempt, also in WG1 Chapter 8 of IPCC-SAR, was to compare the modeled and observed latitude and altitude patterns of temperature trends. It was soon discovered, however, that his claimed “agreement” was due to a selective use of data; he had chosen a time interval (1963-1987) during which the tropospheric trend was increasing, while the overall trend during the period (1957-1995) was not [Michaels and Knappenberger 1996].

By then it had become quite apparent that there was a disparity between the observed trends in the troposphere and the surface [NRC 2000; Singer 2001].

Next, Douglass, Pearson and Singer [2004] carried out a full-scale comparison of available model results and temperature observations from balloons, satellites, and reanalysis. They concluded that the observations did not confirm the expected increase (from GH models) in temperature trends with altitude; but they did not delve into the implication of this disparity. Their result was largely ignored by the IPCC [2007] as it prepared its Fourth Assessment Report.

### *The US CCSP*

Next, a full-scale investigation of this problem was carried out as part of the federally financed Climate Change Science Program. CCSP-SAP1.1 [Karl et al 2006], the first and most crucial of the 21 reports of the CCSP, titled “*Temperature Trends in the Lower Atmosphere: Steps for Understanding and Reconciling Differences,*” confirmed the result of Douglass et al [2004].

To be sure, the abstract of the CCSP 1.1 Executive Summary (authored by Wigley, with the participation of the chapter lead authors, including Santer) claims that the discrepancies between surface warming and tropospheric warming trends have been removed. This statement distorts the sense of the CCSP report and has been widely misunderstood as having confirmed the validity of GH models. CCSP-SAP 1.1 admits, however, that in the tropics “*the majority of observational data sets show more warming at the surface than in the troposphere...[but] almost all model simulations show more warming in the troposphere than at the surface.*” In other words, there exists indeed a discrepancy, which has not been

removed.

Contrary to the claim on page 37, line 31 of CCSP-1.1, the comparison of modeled and observed fingerprints shows clear disagreement [see figures 1.3F and 5.7E, and also 5.4G – all from CCSP-1.1 – displayed also by NIPCC]. While the Executive Summary of CCSP-1.1 claims agreement, this is achieved by a statistical subterfuge, i.e. by using the “range” of values instead of their “distribution” (see figure 4G, page 13 in CCSP 1.1). However, the use of range is clearly an inappropriate statistical measure [Douglass et al. 2007] since it gives undue weight to “outliers.”

Following the publication of CCSP 1.1, and using best available models and data, Douglass, Christy, Pearson, and Singer [2007] extended their comparison between model results and observations in the tropical zone and concluded again that the observations did not confirm the GH model results. This paper was also ignored until a group of independent scientists, the Nongovernmental International Panel on Climate Change (NIPCC), published its summary report in 2008. Drawing mainly on the data from CCSP-1.1 and Douglass et al [2007], NIPCC [Singer et al 2008] showed conclusively the disparity between GH models and observations.

The NIPCC then drew the obvious logical conclusion: Since GH models cannot explain the observations, the warming of the past 30 years must be due predominantly to causes other than GH gases. In other words, the human contribution to the warming trend since 1979 is minor and insignificant – a conclusion contrary to that of IPCC [2007]. Another way of stating the NIPCC result: Climate Sensitivity is considerably less than the values quoted by the IPCC, i.e. 1.5 – 4.5 degC, and more in accord with the much lower values deduced by other methods [Schwartz, Monckton, Lindzen, Spencer].

*Note: The conclusions of Douglass et al [2007] and of NIPCC [Singer et al 2008] have been questioned in a recent paper by Santer et al [August 2008]. They claim “consistency” between models and observations based on two assertions: (1) that the atmospheric temperatures displayed in CCSP-1.1 and IPCC-AR4 [2007] are no longer valid, and (2) that the uncertainties of both models and observations are greater than estimated by Douglass et al. In response, Singer [2008] showed that the claim of consistency is invalid and noted that Santer et al implicitly questioned the validity of the CCSP report (of which Santer, and also Wigley and Karl, were lead authors).*

### **Additional Comments for ANPR and TSD Based on the NIPCC Findings**

- Evidence of warming is not evidence that the cause is anthropogenic.
- The so-called ‘hockey-stick’ diagram of warming has been discredited.
- The correlation between temperature and carbon dioxide levels is weak and inconclusive.
- Computer models don’t provide “evidence” of anthropogenic global warming.
- *The global temperature record is unreliable.*
- Global warming prior to 1940 was not anthropogenic.
- Internal oscillations play a major role in climate change, yet cannot be forecast.
- The role of solar influences on the climate can no longer be neglected.
- *Computer models:*
  - do not consider solar dimming and brightening.
  - do not accurately model the role of clouds.
  - do not simulate a possible negative feedback from water vapor.
  - do not explain many features of the Earth’s observed climate.
  - cannot produce reliable predictions of regional climate change.

- Estimates of recent sea-level rise are unreliable.
- ‘Bottoms-up’ modeling of future sea levels does not uniformly predict rising sealevels. Each successive IPCC report forecasts a smaller sea-level rise.
- Forecasts of more rapid sea-level rise are not credible.
- Past trends in atmospheric levels of CO<sub>2</sub> are poorly understood and controversial.
- Carbon dioxide sources and sinks are poorly understood.
- The role of oceans as CO<sub>2</sub> sources and sinks is a major source of uncertainty.
- The IPCC’s estimates of future anthropogenic CO<sub>2</sub> emissions are too high.
- Higher concentrations of CO<sub>2</sub> would be beneficial to plant and animal life.
- Higher concentrations of CO<sub>2</sub> are not responsible for weather extremes, storms, or hurricanes.
- Human health benefits from warmer temperatures.
- Economic growth benefits from global warming

### **Observations by NIPCC on Problems with IPCC process**

***The IPCC can’t be trusted as a credible science document and does not meet the requirements of the Information Quality Act***

From the very beginning, the IPCC was a political rather than scientific entity, with its leading scientists reflecting the positions of their governments or seeking to induce their governments to adopt the IPCC position. In particular, a small group of activists wrote the all-important Summary for Policymakers (SPM) for each of the four IPCC reports [McKittrick et al. 2007].

While we are often told about the thousands of scientists on whose work the IPCC Assessment Reports are based, the vast majority of these scientists have no direct influence on the conclusions expressed by the IPCC. Those are produced by an inner core of scientists, and the SPMs are revised and agreed to, line-by-line, by representatives of member governments. This obviously is not how real scientific research is reviewed and published. These SPMs turn out, in all cases, to be highly selective summaries of the voluminous science reports – typically 800 or more pages, with no indexes (except, finally, the Fourth Assessment Report released in 2007), and essentially unreadable except by dedicated scientists.

The IPCC’s 1990 First Assessment Report [IPCC-FAR] concluded that the observed temperature changes were “broadly consistent” with greenhouse models. Without much analysis, it arrived at a “climate sensitivity” of a 1.5° to 4.5° C temperature rise for a doubling of greenhouse gases. The IPCC FAR led to the adoption of the Global Climate Treaty at the 1992 Earth Summit in Rio de Janeiro. The FAR drew a critical response [SEPP 1992]. FAR and the IPCC’s style of work also were criticized in two editorials in *Nature* [Anonymous 1994, Maddox 1991]. The IPCC’s 1996 Second Assessment Report [IPCC-SAR] was completed in 1995 and published in 1996. Its SPM contained the memorable conclusion, “*the balance of evidence suggests a discernible human influence on global climate.*” The SAR was again heavily criticized, this time for having undergone significant changes in the body of the report to make it ‘conform’ to the SPM – *after* it was finally approved by the scientists involved in writing the report. Not only was the report altered, but a key graph was also doctored to suggest a human influence. The evidence presented to support the SPM conclusion turned out to be completely spurious.

There is voluminous material available about these text changes, including a *Wall Street Journal* Opinion Editorial article by Dr. Frederick Seitz [Seitz 1996]. See the excerpt below:

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### **A Major Deception on Global Warming**

*Op-Ed by Frederick Seitz*

*Wall Street Journal, June 12, 1996*

*Last week the Intergovernmental Panel on Climate Change, a United Nations organization regarded by many as the best source of scientific information about the human impact on the earth's climate, released "The Science of Climate Change 1995," its first new report in five years.*

...

*But this report is not what it appears to be--it is not the version that was approved by the contributing scientists listed on the title page. In my more than 60 years as a member of the American scientific community, including service as president of both the National Academy of Sciences and the American Physical Society, I have never witnessed a more disturbing corruption of the peer-review process than the events that led to this IPCC report.*

*A comparison between the report approved by the contributing scientists and the published version reveals that key changes were made after the scientists had met and accepted what they thought was the final peer-reviewed version. The scientists were assuming that the IPCC would obey the IPCC Rules--a body of regulations that is supposed to govern the panel's actions. Nothing in the IPCC Rules permits anyone to change a scientific report after it has been accepted by the panel of scientific contributors and the full IPCC.*

*The participating scientists accepted "The Science of Climate Change" in Madrid last November [1995]; the full IPCC accepted it the following month in Rome. But more than 15 sections in Chapter 8 of the report--the key chapter setting out the scientific evidence for and against a human influence over climate--were changed or deleted after the scientists charged with examining this question had accepted the supposedly final text.*

*Few of these changes were merely cosmetic; nearly all worked to remove hints of the skepticism with which many scientists regard claims that human activities are having a major impact on climate in general and on global warming in particular.*

*The following passages are examples of those included in the approved report but deleted from the supposedly peer-reviewed published version:*

*"None of the studies cited above has shown clear evidence that we can attribute the observed [climate] changes to the specific cause of increases in greenhouse gases."□*

*"No study to date has positively attributed all or part [of the climate change observed to date] to anthropogenic [man-made] causes."□*

*"Any claims of positive detection of significant climate change are likely to remain*



*controversial until uncertainties in the total natural variability of the climate system are reduced."*

*The reviewing scientists used this original language to keep themselves and the IPCC honest. I am in no position to know who made the major changes in Chapter 8; but the report's lead author, Benjamin D. Santer, must presumably take the major responsibility.*

...

*Mr. Seitz is president emeritus of Rockefeller University and chairman of the George C. Marshall Institute.*

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This led to heated discussions between supporters of the IPCC and those who were aware of the altered text and graph, including an exchange of letters in the *Bulletin of the American Meteorological Society* [Singer et al. 1997].

SAR also provoked the 1996 publication of the Leipzig Declaration by SEPP, which was signed by some 100 climate scientists. A booklet titled "*The Scientific Case Against the Global Climate Treaty*" followed in September 1997 and was translated into several languages [SEPP 1997; all these are available online at [www.sepp.org](http://www.sepp.org).] In spite of its obvious shortcomings, the IPCC report provided the underpinning for the Kyoto Protocol, which was adopted in December 1997.

The background is described in detail in the booklet "*Climate Policy – From Rio to Kyoto*," published by the Hoover Institution [Singer 2000]. The Kyoto Protocol also provoked the adoption of a short statement expressing doubt about its scientific foundation by the Oregon Institute for Science and Medicine, which attracted more than 19,000 signatures from scientists, mainly in the U.S. [The statement is still attracting signatures, now topping 31,000, and can be viewed at [www.oism.org](http://www.oism.org).]

The Third Assessment Report (TAR) of the IPCC in 2001 [IPCC 2001] was noteworthy for its use of spurious scientific papers to back up its SPM claim of "new and stronger evidence" for anthropogenic global warming. One of these was the so called 'hockey-stick' paper, an analysis of proxy data, which claimed that the twentieth century was the warmest in the past 1,000 years. The paper was later found to contain basic errors in its statistical analysis. This paper and its main author Michael Mann were the subjects of Congressional hearings (House Energy and Commerce Committee) on July 19, 2006. We display here excerpts of Dr. Edward Wegman's testimony [2006]:

*"It is not clear that Mann and associates realized the error in their methodology at the time of publication. Our re-creation supports the critique of the [Mann]MBH98 methods.*

*"In general, we found the writing in MBH98 and MBH99 to be somewhat obscure and incomplete and the criticisms by MM03/05a/05b to be valid. The reasons for setting 1902-1995 as the calibration period presented in the narrative of MBH98 sounds plausible, and the error may be easily overlooked by someone not trained in statistical methodology. We note that there is no evidence that Dr. Mann or any of the other authors in paleoclimate studies have had significant interactions with mainstream statisticians.*

*" Because of this apparent isolation, we decided to attempt to understand the paleoclimate community by exploring the social network of authorships in temperature reconstruction.*

*“We found that at least 43 authors have direct ties to Dr. Mann by virtue of coauthored papers with him. Our findings from this analysis suggest that authors in the area of this relatively narrow field of paleoclimate studies are closely connected. Dr. Mann has an unusually large reach in terms of influence and in particular Drs. Jones, Bradley, Hughes, Briffa, Rutherford and Osborn.*

*“Because of these close connections, independent studies may not be as independent as they might appear on the surface. Although we have no direct data on the functioning of peer review within the paleoclimate community, but with 35 years of experience with peer review in both journals as well as evaluation of research proposals, peer review may not have been as independent as would generally be desirable.*

The IPCC also supported a paper that claimed pre-1940 warming was of human origin and caused by greenhouse gases. This work, too, contained fundamental errors in its statistical analysis. The SEPP response to TAR was a 2002 booklet *“The Kyoto Protocol is Not Backed by Science”* [SEPP 2002].

The Fourth Assessment Report (AR4) of the IPCC was published in 2007 [IPCC 2007]; the SPM of Working Group I was released in February 2007 and the full report in May – after it had been changed, once again, to ‘conform’ to the Summary. It is significant that AR4 no longer makes use of the hockeystick paper or the paper claiming pre-1940 human-caused warming. AR4 concluded that *“most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations”* (emphasis in the original).

However, AR4 ignored available evidence *against* a human contribution to current warming and the substantial research of the past few years on the effects of solar activity on climate change.

### ***Why have the IPCC reports been marred by controversy and so frequently contradicted by subsequent research?***

Certainly its agenda to find evidence of a human role in climate change is a major reason; its organization as a government entity beholden to political agendas is another major reason; and the large professional and financial rewards that go to scientists and bureaucrats who are willing to bend scientific facts to match those agendas is yet a third major reason. Another reason for the IPCC’s unreliability is the naive acceptance by policymakers of ‘peer reviewed’ literature as necessarily authoritative. It has become the case that refereeing standards for many climate-change papers are inadequate, often because of the use of an ‘invisible college’ of reviewers of like inclination to a paper’s authors. [Wegman et al. 2006] (For example, some leading IPCC promoters surround themselves with as many as two dozen coauthors when publishing research papers.)

Policy should be set upon a background of demonstrable science, not upon simple (and often mistaken) assertions that, because a paper was refereed, its conclusions must be accepted. To meet its obligations under the Information Quality Act, EPA must carefully review every document that it purports to use for its “policy” determinations, especially documents, including model projections, which were produced outside the requirements of U.S. law.

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Full report available at [http://energycommerce.house.gov/108/home/07142006 Wegman Report.pdf](http://energycommerce.house.gov/108/home/07142006%20Wegman%20Report.pdf)