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August 13, 2011

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Dear Ms. Dewes and Mr. Infurna:

Re: RCRA Section 3008(h) Administrative Order on Consent (AOC);  
Docket No. II-RCRA-90-3008(h)-0209; New York State  
Department of Environmental Conservation Draft Statement of  
Basis for Air Deposition Area No. 1 (OU2 and OU4) and Culvert  
105 (OU5); FMC Corporation, Middleport, New York; USEPA ID  
No. NYD 002126845 DER Site No. 932014

FMC Corporation hereby submits its Objections and Comments to the New York State Department of Environmental Conservation Draft Statement of Basis for Air Deposition Area No. 1 (OU2 and OU4) and Culvert 015 (OU5) FMC Corporation Middleport, New York facility, dated June 2012. These Objections and Comments are submitted as part of the public comment process on the Draft Statement of Basis. The Objections and Comments are also submitted in accordance with the above-referenced AOC and are intended to be the substantive foundation for a meeting with the Agencies pursuant to Section XI.1. of the AOC as requested by FMC Corporation in a letter dated June 22, 2012.

**FMC**

If you have any questions concerning this submission, please direct them to me.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "S.J. Tollin". The signature is written in a cursive, slightly slanted style.

Shawn J. Tollin  
Manager, Environmental Remediation

Enclosure

cc: Amy Chester, Esq. (USEPA)  
Benjamin Conlon, Esq. (NYSDEC)  
Teresa Mucha, Esq. (NYSDEC)

**Objections/Comments Submitted by FMC Corporation to:**

**NEW YORK STATE  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION**

**DRAFT STATEMENT OF BASIS  
FOR**

**Air Deposition Area #1 (OU2 and OU4) and Culvert 105 (OU5)**

**FMC Corporation  
Middleport, New York**

**USEPA ID No. NYD002126845**

**DER Site No. 932014**

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FMC Corporation ("FMC") submits the following objections to, and comments on, the New York State Department of Environmental Conservation's ("NYSDEC" or the "Department") Draft Statement of Basis for Air Deposition Area #1 ("OU2" and "OU4") and Culvert 105 ("OU5"), FMC Corporation, Middleport, New York, USEPA ID No.: NYD002126845, DER Site No. 932014 (the "Draft Statement of Basis"). FMC's objections and comments are submitted as part of the public comment process and are also intended to be the foundation for an additional meeting with the Department, the New York State Department of Health ("NYSDOH"), and the United States Environmental Protection Agency ("USEPA") (collectively, the "Agencies") pursuant to Section XI, Paragraph 1, of the RCRA Section 3008(h) Administrative Order on Consent (the "AOC") between FMC and the Agencies.

In submitting these objections and comments, FMC expressly reserves all of its rights to further object to and contest the determination(s) made in the Draft or Final Statement of Basis.

## I. EXECUTIVE SUMMARY

The Agencies' selection of corrective measures alternative 9 ("CMA 9") in the Draft Statement of Basis is wrong for three fundamental reasons.

### 1. **CMA 9 is not necessary to protect human health and the environment.**

There is no credible evidence of adverse health effects from contact with soil arsenic concentrations similar to those present in Middleport, New York. All of the corrective measure alternatives ("CMAs") in the corrective measures study ("CMS") result in conditions adequately protective of human health and the environment and consistent with background levels of arsenic in the area. Since there are no significant differences among the CMAs with respect to the protection of human health and the environment, health effects should not be the principal consideration in selecting from among the remedial alternatives.

### 2. **CMA 9 cannot be justified when you compare its costs to its marginal potential benefit.**

CMA 9 would cost tens of millions of dollars more than the other CMAs (except its analog, CMA 2) and has more significant indirect cost to the community than the other CMAs. The uncontradicted site-specific evidence in the record demonstrates that CMA 9 does not reduce arsenic exposure/risk significantly more than the other CMAs. As a result, the selection of CMA 9 cannot be justified in light of its cost or on a cost-effectiveness basis.

### 3. **CMA 9 cannot be justified using the process required by the AOC.**

CMA 9 was not included in the CMS. CMA 9 fails a fair and objective evaluation comparing the CMAs using CMS criteria, corrective action objectives ("CAOs") established by the Agencies, and site-specific evidence in the administrative record. CMA 9 is not technically superior to the other alternatives. CMA 9 is not more effective in addressing environmental impacts than the other alternatives. CMA 9 is not mandated by applicable institutional imperatives. In fact, CMA 9 fails the legal test established by the New York Court of Appeals for determining the validity of the Department's remedial decisions. CMA 9 is the least favorable of all the alternatives in terms of Green Remediation practices. CMA 9 cannot be justified in light of its direct and indirect costs. CMA 9 has been opposed and rejected by the community, individual property owners and elected representatives. CMA 9 does not satisfy the CAOs and is inconsistent with an integrated reading of those remedial goals. The Department's promise to be "flexible" cannot cure these multiple fatal flaws.

Consequently, CMA 9 is arbitrary, capricious, and is an abuse of discretion; it is not necessary to protect public health and the environment; and it is not in accord with state and federal law.

## **II. OBJECTIONS/COMMENTS TO EACH SECTION OF THE DRAFT STATEMENT OF BASIS**

Specific objections and comments are set forth below to correspond to and track the Agencies' evaluation and selection of CMA 9 in Section 7 of the Draft Statement of Basis.

### **A. FMC's Response to Section 7.0 – Selection and Evaluation of Proposed Remedies**

The Agencies' evaluation of the CMAs is set forth in Section 7 of the Draft Statement of Basis, which begins by rejecting all of the alternatives developed for, and evaluated in, the CMS. The Agencies propose a new remedy -- CMA 9.

CMA 9 requires the removal of soil containing arsenic at levels of 20 parts per million ("ppm") or more; that clean-up trigger is to be applied at all locations/depths (including soil surrounding Culvert 105 pipes), with some case-by case flexibility. CMA 9 allows for on-site disposal of remedial soils in a corrective action management unit (a "CAMU") provided that various technical, legal, and scheduling issues are successfully resolved; otherwise off-site disposal is required.

CMA 9 was not part of the design and development of the CMS. CMA 9 was not critically evaluated and compared to the other CMAs in the CMS, as required by the AOC. The Agencies instead created CMA 9 in issuing the Draft Statement of Basis. The creation and selection of CMA 9 violates the process mandated by the AOC, which specifically requires the CMS to be performed in accordance with "Tasks" set forth in Attachment II to the AOC, as follows:

- Task VIII of Attachment II requires the identification, screening, and development of alternative corrective measures based on the CAOs.
- Task IX of Attachment II requires each CMA and its components to be evaluated using technical, environmental, human health, and institutional criteria.
- Task IX. A. sets forth the detailed elements of each of the above criteria, including a recommended and justified CMA using technical, human health, and environmental criteria.
- Task X, Paragraphs A, B and C, explain how the technical, human health and environmental criteria are to be used in making that determination.

- The CMS work plan approved by the Agencies adopted three additional criteria: green remediation practices, cost, and community/property owners' acceptance.

The CMAs to be critically evaluated in the CMS were developed through a lengthy iterative process between FMC and the Agencies. Through that process, FMC and the Agencies agreed on the specific CMAs to be evaluated in the draft CMS. The remedial option designated by the Agencies as CMA 9 was not developed through this process and not included in the CMS.

The CMAs included in the CMS were subject to rigorous critical evaluation using the criteria established in the approved CMS work plan and the CAOs promulgated by the Agencies. [See Section 7 of the CMS.] CMA 9 was not evaluated in the CMS. The Agencies' Draft Statement of Basis is a series of conclusory, summary assertions concerning CMA 9 in relation to other alternatives, which extrapolate from the CMS analysis of CMA 2. That approach is not the functional equivalent of, or a legitimate substitute for, the rigorous evaluation of CMAs developed for and included in the CMS.

Consequently, the Agencies failed to follow the process mandated by the AOC in creating and selecting CMA 9, and, therefore, made that determination in violation of the AOC.

#### **B. FMC's Response to Section 7.1 – Department's Evaluation of the CMAs**

The specific criteria established pursuant to the AOC for evaluating the CMAs and comparing them to one another are: (1) technical, (2) environmental, (3) human health, (4) institutional, (5) green remediation practices, (6) cost, and (7) community/property owner acceptance. CMA 9 cannot be justified when these criteria are applied to it using the site-specific evidence in the record. Each criterion is discussed below in the order in which each appears in the Draft Statement of Basis.

##### *1. Technical*

##### *a. Performance and Reliability*

CMA 9 is not demonstrably more reliable than any of the other CMAs.

The Agencies assume that the number of properties remediated, and the amount of arsenic contaminated soil removed, under CMA 9 will be similar to that of CMA 2 (i.e., 181 properties and approximately 228,000 cubic yards of soil). Based on that assumption, the Agencies argue that CMA 9 will remove arsenic contaminated soil from more properties than any of the other alternatives. However, the Agencies emphasize that CMA 9 is characterized by "flexibility." First, the Agencies state that individual property owners who do not wish to



participate in the program will not be required to have the soils removed from their property. Second, soil exceeding the 20 ppm clean-up trigger may not be removed in some cases at the property owner's request, and to avoid interference with various property features (e.g., trees). The Agencies also assert that the volume of soil requiring removal could be substantially reduced by soil mixing/tilling on the large non-residential tracts in the Air Deposition Area.

Given this kind of "flexibility," the Agencies cannot objectively determine CMA 9 will result in the remediation of more properties, and the removal of a greater area/volume of arsenic contaminated soil, than the other alternatives. The Agencies' conclusion that CMA 9 provides for greater long-term performance and reliability in minimizing exposure to arsenic is completely undermined by CMA 9's reliance on flexibility to overcome other serious problems with that alternative.

The Agencies also conclude that CMA 9 is more reliable than all of the other alternatives because it would not require institutional/engineering controls. The only institutional controls relevant to this analysis are deed restrictions. Once those deed restrictions - which would need to be approved as to form and substance by the Agencies - have been executed and recorded, they are completely reliable and effective in restricting the use of the subject properties, and thereby minimizing exposure to residual arsenic. There are no engineering controls to be employed under CMAs 2-8, except with respect to the Wooded Parcel property, where the Agencies have approved the use of both institutional controls and engineering controls. Therefore, there is no objective basis for the conclusion that CMA 9 is more reliable than alternatives that employ institutional and/or engineering controls.

b. Implementability

CMA 9 is more difficult to implement than any of the other CMAs.

The Agencies underestimate the difficulties associated with implementing CMA 9 with its critical, but undefined, element of flexibility. The need to evaluate each eligible property on a case-by-case basis to determine when, where, and how to conduct excavation (including the corresponding need to excavate by hand) makes CMA 9 more difficult to implement than any of the other alternatives which employ quantitative screening criteria and mechanical excavation. In addition, the Agencies' insistence that CMA 9 be completed in five years will make implementation especially difficult.

c. Safety

CMA 9 is more dangerous to implement than any of the other CMAs.

The selection of CMA 9 fails to appropriately consider the safety factor because the Agencies acknowledge that safety risks may be present for a longer period of time under CMA 9 than with respect to any of the other CMAs. The Agencies have arbitrarily asserted that

CMA 9 can be performed in sixty months. That estimate is inconsistent with FMC's actual experience excavating soils and restoring residential properties in this very community. The Agencies have significantly understated the length of time during which the safety risks associated with CMA 9 will exist.

In addition, the Agencies ignore the fact that CMA 9 will involve more extensive use of heavy equipment, and more truckloads of excavated soil, than any other CMA except CMA 2. That omission leads the Agencies to significantly underestimate the nature and magnitude of the safety risks posed by CMA 9.

The Agencies also argue that the safety risks associated with CMA 9 should be discounted because a health and safety plan will be developed to address them. That argument is disingenuous because a health and safety plan will be developed for whatever CMA is performed. More importantly, the argument is irrelevant. For the purposes of a comparative evaluation, the only operative question regarding safety is which CMA poses the fewest and/or least significant safety risks for the shortest period of time? For the reasons set forth above, CMA 9 will pose the greatest safety risks for the longest period of time.

In summary, the Agencies have not demonstrated (and cannot demonstrate by an objective evaluation based on evidence in the record) that CMA 9 is easier to implement, more reliable, and safer than any of the other alternatives. In fact, a close examination of the Agencies' arguments demonstrates that it fails on all counts.

2. Environmental

a. Short Term Impacts

The CMS demonstrates that environmental impacts during construction (*i.e.*, "short-term impacts") are proportional to the number of properties to be remediated and the amount of soil to be excavated. It is impossible to tell with certainty how many properties will be remediated and how much soil will be excavated under CMA 9 because of its undefined element of flexibility. However, the Agencies contend that CMA 9 will result in more excavation over larger areas than any of the other CMAs (except its analog CMA 2). If that is true, the Agencies have improperly discounted the short-term environmental consequences of CMA 9 in comparing alternatives.

b. Long Term Impacts

The Agencies state: "It is well-documented that elevated levels of arsenic in soil can cause adverse human health and ecological impacts." Draft Statement of Basis at p. 24. That statement is unsupported, overbroad, and misleading. [See section II.B.3. of these Objections/Comments dealing with the assessment of health risks posed by arsenic in soil.]

The “analysis” of long-term environmental impacts flows from that faulty premise. The Agencies’ “analysis” is really nothing more than a series of conclusory assertions (*i.e.*, arsenic in soil is bad; removing more soil with arsenic in it is better than removing less; CMA 9 removes more than all of the others except for CMA 2) and a baseless conclusion that CMA 9 is best at reducing long-term environmental impacts.

The analysis and conclusion are superficial. The Agencies do not discuss the actual ecological impacts of CMA 9 (most notably, its devastating effect on the mature tree population of the community). Instead, the Agencies simply assert, without any evidentiary support, that CMA 9 will produce “... more permanent long-term beneficial ecological benefits.” Draft Statement of Basis at p. 24. Consequently, the Agencies have not demonstrated with site-specific evidence in the administrative record that CMA 9 would reduce environmental impacts (short-term or long-term) of arsenic in soil in OU2/4 and OU5 more than any other CMA.

### 3. Human Health

#### a. Effect of Arsenic in Soil

The Agencies make the following broad statement regarding human health issues: “Arsenic is a known human carcinogen. There is strong evidence of arsenic carcinogenicity and of non-carcinogenic health effects based on large scale epidemiological studies.” This statement is followed by a sentence asserting “[t]he Department therefore has an obligation to minimize, to the extent practical, both current and potential future human exposure to elevated levels of arsenic in soil when selecting an arsenic remedial goal.” Draft Statement of Basis, at p. 24. This argument is incomplete, misleading, and does not lead logically to the asserted conclusion for the following reasons:

**There is no credible evidence of adverse health effects from contact with soil arsenic concentrations similar to those present in Middleport.** Arsenic has a long history of medicinal and other uses at high doses involving exposures many orders of magnitude higher than those anyone might achieve from contact with Middleport soils. Initial concerns about arsenic toxicity derived from observations of effects from these very high doses. More recently, cancer incidence has been observed to be elevated in populations ingesting large amounts of arsenic in drinking water with arsenic at concentrations at least ten times higher than the current arsenic drinking water standard. The assertions in the Draft Statement of Basis completely disregard the fundamental concepts of dose response assessment that form the foundation of toxicology and risk assessment. Observations of adverse health effects at high doses do not provide adequate evidence to support assertions regarding similar risk of adverse effects at much lower doses. This is especially true for doses of the magnitude potentially associated with Middleport soils, which are a fraction of the typical daily arsenic doses from food and drinking water. For example, the USEPA and the State of New York use an arsenic drinking water standard of 10 µg/L, which yields a daily arsenic dose that is approximately ten times greater than the dose a child might get from soil ingestion. Arsenic is naturally present in drinking water

and most foods. Studies of background exposure to arsenic have demonstrated that the majority of exposure comes from these two sources and that incidental ingestion of soil and inhalation air contributes minimally. As can be seen from Figure 1 below, ingestion of arsenic in soil within the range of arsenic concentrations present in Middleport soils has little incremental effect on lifetime average total daily inorganic arsenic intakes.<sup>1</sup> [See also Table 5-19 of the Human Health Risk Assessment, which is part of the draft CMS.] Given these findings, there is no evidence that selection of a particular soil arsenic remediation goal will have *any* practical impact on the daily arsenic exposures of Middleport residents.

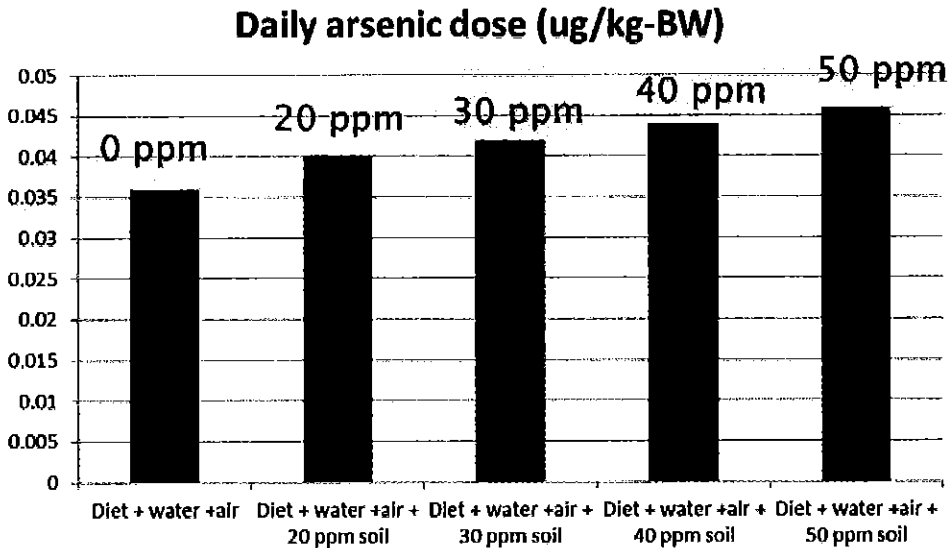


Figure 1. Soil arsenic contribution to total daily inorganic arsenic exposure

b. NYSDOH Summary Rejection of the CMS Risk Assessments and Human Health Studies

The Agencies did not provide or otherwise publish a written, expert evaluation of the risk assessments and other human health studies made a part of the Draft CMS report. It is impossible for FMC to critically review and evaluate NYSDOH's purported analyses of the risk assessments and human health studies because there are none. The statements contained in the Draft Statement of Basis are nothing more than conclusory allegations unsubstantiated by any independent written work by NYSDOH.

<sup>1</sup> Assumes that a child consumes 1.3 µg/day in diet, drinks 0.6 liters of water (1 µg/L arsenic), ingests 0.1 g soil, and inhales 6.8 m<sup>3</sup> air (0.025 µg/m<sup>3</sup>), and that an adult consumes 3.2 µg/day in diet, drinks 1.4 liters of water, ingests 0.05 g soil, and inhales 13.3 m<sup>3</sup> air, and that relative bioavailability of arsenic in soil is 0.25. For cancer risk dose, assumes that child exposure is 6 years at 15 kg body weight, adult exposure is 24 years at 70 kg body weight, soil dose averaged over 70 year lifetime.

On the other hand, FMC submitted human health risk assessments and related health studies in the CMS, and those are the sole and uncontradicted site-specific evidence in the administrative record on this subject. FMC's submissions stand, and are incorporated herein by reference, in contradiction to the Draft Statement of Basis.

c. The Risk Evaluation Underlying the New York State Soil Cleanup Objectives

The Agencies' assertion that the risk assessments used in developing the Soil Cleanup Objectives ("SCOs") are site-specific to the Middleport community is wrong. The SCO risk assessments do not reflect the risks attendant to the arsenic in the soil in Middleport for the following reasons.

(i) Site-Specific Risk Assessment

The risk evaluations prepared by NYSDOH to develop the State's SCOs under 6 NYCRR Part 375 (the "Part 375 Regulations") are, by definition, *not* site-specific risk assessments applicable and appropriate to the Middleport community. SCOs are intended to be broadly applied across New York State and do not take into account site-specific information for Middleport. Specifically, the NYSDOH default assumptions for bioavailability, exposure frequency and duration, and vegetable consumption, lack site-specific information and are inconsistent with actual conditions in Middleport. Additionally, the soil ingestion rates selected by NYSDOH do not incorporate all of the peer-reviewed literature available at the time the SCOs were developed.

- *Bioavailability*

Default assumptions for oral and dermal relative bioavailability are inconsistent with Middleport data and their use by NYSDOH overestimates risk to residents. The SCOs are calculated based on the assumption of one hundred percent oral relative bioavailability, but site-specific data demonstrates that relative bioavailability for ingestion of Middleport soils is only twenty-two percent. The SCOs also rely on a default assumption of three percent absorption of arsenic from soil via dermal exposure even though site data demonstrated that dermal absorption from Middleport soils is negligible and likely zero. Correction of the arsenic SCO for these site-specific factors would yield a much higher SCO.

- *Exposure Frequency and Duration*

Exposure frequency and exposure duration assumptions for the SCOs are intended to be broadly applied to the entire state. The exposure frequency and exposure duration assumptions in the FMC Middleport Human Health Risk Assessment for the CMS, however,

were developed specifically for the Middleport Site and were supported by, among other things, the Middleport Community Survey results.

- *Vegetable Consumption*

Risk-based residential SCOs multiply the SCOs by a factor of 0.2 to account for the vegetable consumption pathway. This factor is not specific to arsenic or to Middleport soils and likely overestimates the importance of this exposure route. Furthermore, homegrown produce collected during the arsenic biomonitoring study showed low concentrations of arsenic (Tsuji et al. 2005). The likely negligible contribution of homegrown produce in Middleport to soil-derived arsenic exposure suggests that the risk-based SCO should be up to five times higher.

- *Soil Ingestion Data*

In the Technical Support Document (“TSD”) for the development of the SCOs, NYSDEC and NYSDOH dismiss the continued analysis of the soil ingestion data collected by Stanek, Calabrese, and colleagues with the following statement: “the Stanek and Calabrese studies rely primarily on reanalysis of the original Calabrese et al. data.” This untenable position suggests that NYSDEC does not acknowledge scientific advancements in data interpretation and analysis. Discussion of the original study, without incorporating subsequent re-analyses, yields an incomplete evaluation of the soil ingestion data and perpetuation of uncertainties that were further investigated and reduced in later publications. The soil ingestion assumptions used in the FMC Middleport Human Health Risk Assessment for the CMS incorporates recent scientific advancements that yield more reliable estimates of soil ingestion rates.

In sum, the Agencies’ assertions with respect to human health risk are not supported by site-specific evidence actually in the administrative record (namely, the uncontradicted human health risk assessment and other human health studies made a part of the draft CMS), but in reliance on a default-based risk assessment prepared for the purpose of developing regulatory values to be applied generically across the state.

- (ii) Background

In keeping with the Part 375 Regulations and associated guidance, the Agencies’ have defaulted to the use of background soil concentrations as the soil cleanup objective because their generic/default-based risk assessment concludes that arsenic in soil at concentrations less than 1 ppm (that is well below naturally occurring levels) pose a cancer risk above the  $10^{-6}$  target. The Agencies assert arsenic background for Middleport is considered to be near or below 20 ppm. The Agencies then argue that CMA 9, which calls for removal of soil with arsenic above 20 ppm at all locations and depths, with some case-by-case flexibility, will be the best way to achieve “normal background” arsenic concentrations. However, the uncontradicted evidence contained in the draft CMS demonstrates that the average concentration of arsenic across OU2/4

will be reduced to 20 ppm or less under all CMAs (except CMA 1 [no further action] and CMA 5 [22.1ppm]). [CMS; Appendix F; Table 5-5.]

The Agencies' position appears to be that any individual data points containing arsenic with concentrations greater than 20 ppm exceed background and must be eliminated and the use of averages to evaluate soil conditions after corrective action is unacceptable in determining whether the background conditions have been met. The Agencies provide no legal or scientific support for that position because there is none.

- *Background and the Law*

The statutes which govern this matter [42 U.S.C. § 6928(h) and § 71-2727 of the Environmental Conservation Law] require corrective action "...necessary to protect human health and the environment." ***Those statutes and related regulations do not require remediation trigger values to be applied on a point-by-point basis or, more importantly, do not prohibit the use of averages in evaluating post-corrective action conditions to determine whether human health or the environment have been adequately protected or, in this case, background conditions have been achieved.***

- *Background as an Average or a Range of Values*

The Agencies' insistence on applying 20 ppm as a background value on a point-by-point basis to drive remediation is inconsistent with sound scientific principles for using background conditions or values as remedial goals.

The nature of the potential risks posed by arsenic in soil is such that it only makes sense to evaluate them by understanding the average concentration or distribution of arsenic in soil over full exposure units; focusing on individual data points is not sound science. Determining a representative soil concentration is essential for understanding the potential for exposure to individuals. For example, because individuals do not spend all their time in one single spot within a yard, it is not reasonable to use a single location within a yard to estimate exposure over time. Instead, a representative concentration for the entire yard that includes both low and high concentration samples (*e.g.*, an average or an upper confidence limit on the mean) is more appropriate for determining the potential for exposure over a period of time.

Because it is not feasible to sample one hundred percent of the soil within a yard, representative samples are collected to evaluate the range the soil concentrations present. In some cases, composite samples are collected to derive a better estimate of the average concentration within an area.<sup>2</sup> However, when discrete samples are collected, a single sample is

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<sup>2</sup> Sampling guidance issued by USEPA and state agencies recommends averaging samples prior to analysis by conducting composite or multi-incremental sampling. *See, e.g.*, USEPA 2002 Guidance on Choosing Sampling Design for Environmental Data Collection for Use in Developing a Quality Assurance Project Plan EPA/240/R-02/005, USEPA, <http://www.epa.gov/quality/qs-docs/g58-final.pdf>; ITRC 2012 Incremental Sampling

not expected to be representative of that yard soil to which individuals will be exposed, and averaging individual sample results is required to determine a concentration representative of exposure.

The Agencies themselves acknowledge these principles by indicating that they are considering the use of soil blending or soil mixing as an alternative under CMA 9 for large non-residential tracts of land. In simple terms, that means mixing soil surrounding individual data points with arsenic exceeding 20 ppm with large areas of soil containing arsenic at lower concentrations to produce an average distribution of arsenic on that large tract below 20 ppm. The rationale for this consideration appears to be that while the total amount of arsenic remaining on the tract of land will remain the same, eliminating specific locations where arsenic exceeds 20 ppm is necessary to protect the public health. Such reasoning follows from a fundamental misunderstanding of the nature of the risk. Eliminating the single points with concentrations over 20 ppm will have no meaningful effect on reducing overall exposure to arsenic in soils, much less to arsenic exposure from all sources. The discussion above, and presented in Figure 1, show that lifetime average exposures to soil containing 20 or 30 or 40 ppm of arsenic contribute only a very small amount to normal daily arsenic exposures from diet and drinking water. The notion that a single location within a yard that exceeds 20 ppm may contribute substantially to arsenic exposure is scientifically insupportable.

*Arsenic background concentrations in soil are best represented or expressed by a range. For example, the 2001-2003 Gasport Area Background Study included analyses for 103 soil samples representative of various current land uses, and found a range of concentrations of arsenic between 2.3 and 121.3 mg/kg.* Although initial analysis of this data set using specific property use factors yielded a 95<sup>th</sup> percentile concentration of 20 mg/kg, it is important to understand that soil samples from areas not impacted by FMC, but with arsenic concentrations higher than 20 mg/kg, are easily found in the Middleport area. First, where the 95<sup>th</sup> percentile is 20 mg/kg, by definition 5% of the samples representing background are expected to have concentrations above 20 mg/kg. Second, the 20 mg/kg value was derived through a complex sampling and weighting scheme that acknowledged that concentrations varied both as a function of current and historical land use. It has been well known for some time that orchard and former orchard areas typically have higher concentrations of arsenic in soil as a result of pesticide use. For example, Shacklette reported in 1980 that New York apple orchard soils had a range of soil arsenic concentrations between 13 and 100 mg/kg. Shacklette, H.T., 1980, Elements in Fruits and Vegetables from Areas of Commercial Production in the

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Methodology, The Interstate Technology & Regulatory Council <http://itrcweb.org/ism-1/>. The Interstate Technology Regulatory Council ("ITRC"), a state-led group of governmental agencies from all fifty states, federal partners, industry and other stakeholders, has issued the guidance document Incremental Sampling Methodology. (ITRC 2012). This guidance summarizes a structured composite sampling approach designed to increase sample representativeness and reduce bias. A number of states recommend this approach, including Alaska, Hawaii, and Ohio, and the U.S Army Corp of Engineers has also issued guidance on the topic (ALDEC 2009; HDOH 2009; OHEPA 2009; USCOE 2009). In the Superfund Lead-Contaminated Residential Sites Handbook, USEPA (2003) recommends that residential yards be sampled with five-point composites. Note that this recommendation separates the front, side, and back yards and is dependent on yard size. Maryland also allows for compositing of soil samples for the purpose of demonstrating compliance (MDE 2008).



Conterminous United States, U.S. Geological Survey Professional Paper 1178. The orchard soil samples included in the 2001- 2003 Gasport Area Background Study had arsenic concentrations ranging from 3.1 to 121.3 mg/kg, with fifty percent of the samples above 20 mg/kg. Overall, approximately fifteen percent of the individual samples analyzed in the Gasport Area Background Study had concentrations above 20 mg/kg, including approximately nine percent of the samples taken in areas identified as residential. This makes clear that use of 20 mg/kg as a bright-line concentration threshold for remediation will result in the remediation of soils that reflect only background concentrations of arsenic.

Further, in selecting 20 mg/kg as a bright-line cleanup level, the Agencies have taken a position that may be difficult to achieve in practice. It may be difficult to find replacement soils that meet this concentration threshold, and further, replacement soils are generally sampled on a composite, or average, basis in order to determine if they meet clean backfill criteria. If replacement soils are to meet a 20 mg/kg criterion, but are composite sampled, then soils with average concentrations as high as 20 mg/kg may be used for replacement. That would yield conditions consistent with what would be achieved with a cleanup level of 20 mg/kg *on average* rather than as a single sample/bright-line limit. Even if the replacement soil arsenic concentration criterion is a concentration lower than 20 mg/kg, there will be no guarantee that individual samples taken from the replacement soils would not exceed 20 mg/kg. Thus, it is quite possible that a remediation and soil replacement program, as required by the Agencies, will not reduce arsenic concentrations in all remediated areas.

Finally, also see the discussion on the use of averages set forth in the section II.B.4. of these Objections/Comments concerning the institutional criteria.

To summarize: the risk assessments used to develop the SCOs in the Part 375 Regulations are not site-specific to Middleport and the use of 20 ppm on a point-by-point basis to drive remediation is inconsistent with widely understood and accepted scientific principles for using background conditions as remedial goals.

d. Short-Term Arsenic Exposure

The Agencies assert that excavation activities have the potential to produce some short-term arsenic exposures for construction workers and residents, primarily from inhalation and dermal exposures. However, this assertion is not supported by any quantitative risk analysis and ignores the site-specific study demonstrating negligible dermal absorption of arsenic from soil. The subsequent assertion that all the CMAs are considered to have similar potentials for such exposures is similarly unsupported by any analysis, and fails to acknowledge the no action option and marked differences in the extent of remediation among the other CMAs. The Agencies then state that features designed to mitigate such exposures are included in the proposed remedy. Regardless of whether such mitigation features are necessary, the features noted are not specific to a particular CMA and will be developed for whichever CMA is selected.

e. Long-Term Arsenic Exposure

Again, the Agencies' "analysis" of long-term arsenic exposure is nothing but a series of conclusory assertions without any basis. That analysis is superficial and fails to address the uncontradicted analyses and conclusions set forth in the health risk assessment and related health studies made a part of the draft CMS. Those assessments/studies demonstrate the following:

(i) The conditions that would exist in the Middleport community after any of the alternatives are carried out result in cancer risk calculations within USEPA's acceptable risk range.<sup>3</sup> For the analyses with site-specific assumptions, risks for all CMAs (including no further action) for the Air Deposition Study Area are less than  $1 \times 10^{-5}$ , as are risks for all CMAs for the Culvert 105 Study Area North of the Canal, except for CMA 1, which slightly exceeds  $1 \times 10^{-5}$  for the site-specific deterministic evaluation (but not for the site specific probabilistic analysis).

(ii) All properties currently have mean surface and mean overall soil concentrations below or within USEPA's acceptable risk range when compared to risk-based concentrations, calculated using reasonable maximum exposure assumptions specific to Middleport.

(iii) Non-cancer arsenic risks are not of concern; all non-cancer risks are below the target hazard quotient of one with most risks at least one order of magnitude below this threshold.

(iv) Arsenic in sub-surface soils does not pose an unacceptable risk.

(v) There are no unacceptable risks to subsurface utility workers. All cancer risks to utility workers in both the Culvert 105 Study Area and the Wooded Parcel are below a  $10^{-6}$  risk, and all non-cancer risks are below a hazard quotient of one (*i.e.*, below a level of concern).

(vi) There is virtually no difference in the health risk reduction achieved using any of the alternatives evaluated in the CMS (except for CMA 1 [no further action] for the Culvert 105 Study Area). Figures 2 and 3 below illustrate how small the differences are and also show that the differences between risks in Middleport under any of the CMAs, and risks from background soil (from the Gasport study), are very small. Since there is no significant difference among the CMAs with respect to the protection of human health and the environment, health effects should not be the principal consideration in selecting from among the alternatives.

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<sup>3</sup> For current conditions for the Culvert 105 study area north of the canal for reasonable maximum exposures for default risk calculations only, the excess cancer risk is slightly above  $1 \times 10^{-4}$ ; however, when rounded to one significant figure in accordance with risk assessment guidance, the excess cancer risk is  $1 \times 10^{-4}$ .

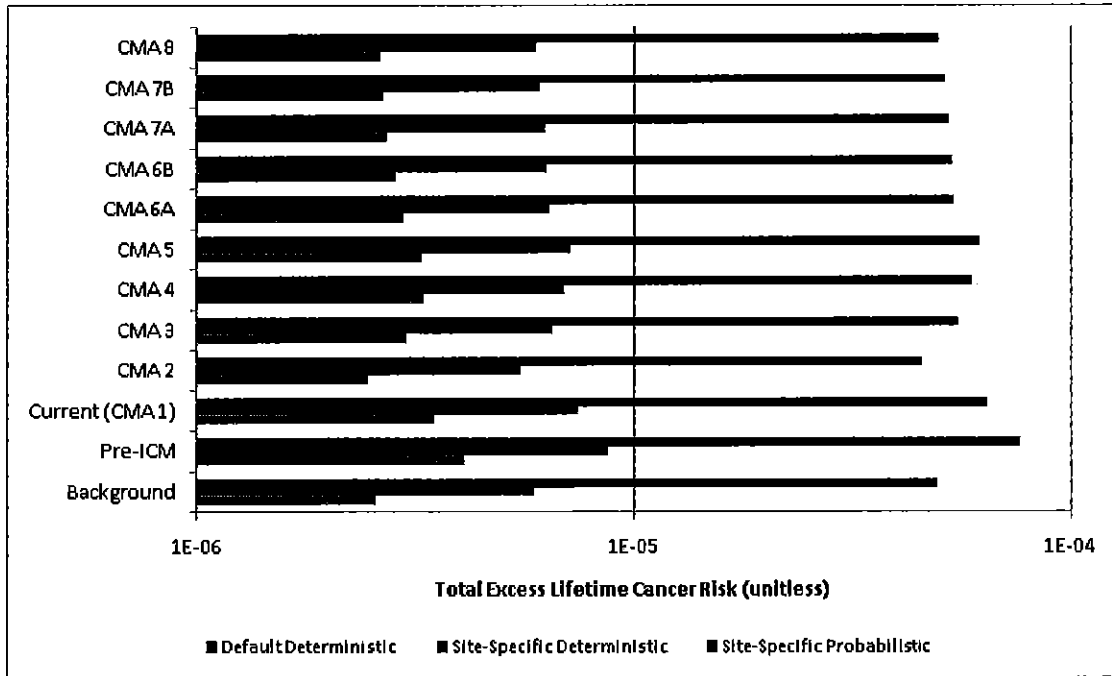


Figure 2. Total RME Excess Lifetime Cancer Risks for Adult plus Child Resident in Air Deposition Study Area, Calculated Using Various Risk Analysis Methods

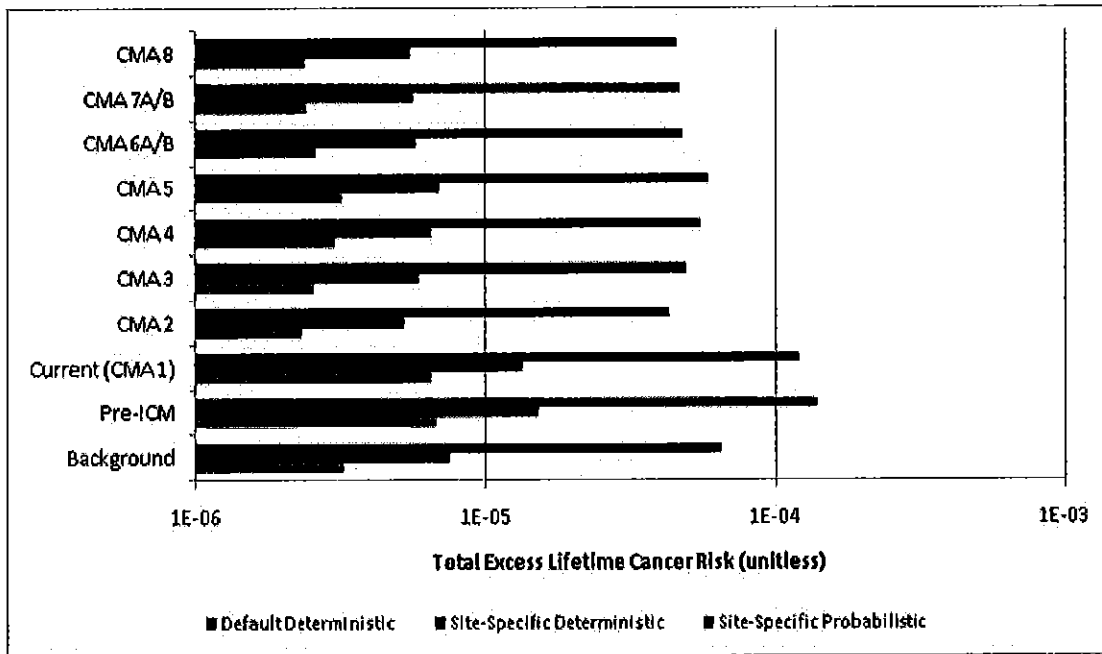


Figure 3. Total RME Excess Lifetime Cancer Risks for Adult plus Child Resident in Culvert 105 Study Are North of the Canal, Calculated Using Various Risk Analysis Methods

(vii) Finally, the negligible reduction in exposure is occurring only with respect to arsenic in soil; the vast majority of arsenic to which the Middleport community is exposed on a daily basis comes from food and water. Figure 1 above demonstrates the small contribution of soil arsenic to lifetime average daily arsenic intakes.

Therefore, the Agencies have not demonstrated by an objective evaluation of the evidence present in the administrative record that CMA 9 is necessary to protect human health or the environment, necessary to produce a post-remediation arsenic distribution consistent with background conditions, or provides any marginally significant additional human health risk reduction or other human health benefit than any of the other CMAs.

#### 4. Institutional

The Agencies attempt to justify CMA 9 by summarily concluding that only CMA 9 (as an analog to CMA 2) satisfies institutional imperatives. That conclusion is incorrect and is based on the premise that the Part 375 Regulations, associated SCOs, and guidance (specifically, NYSDEC Commissioner’s Policy No. 51 (CP-51) — Soil Cleanup Guidance, issued October 21, 2010 (“CP-51”)) are the exclusive and controlling authority in this case. They are not.

a. New York State Part 375 Regulations, Associated SCOs, and Guidance

The Agencies' entire analysis on this point rests exclusively on reference to the Part 375 Regulations and associated guidance. The Part 375 Regulations, SCOs, and associated guidance are not the operative or dispositive legal authority to be used in making the CMA determination. Nevertheless, that is precisely how the Agencies have used them. For the reasons set out in more detail in these Objections/Comments on the CAOs, (Appendix A to the Draft Statement of Basis), the Agencies' exclusive and dispositive reliance on the Part 375 Regulations in making its determination is in violation of the AOC; it is arbitrary, capricious and abuse of discretion; it is not necessary to protect human health or the environment; and it is otherwise not in accordance with applicable federal and state law.

b. Use of Averages

The Agencies also attempt to justify CMA 9 by arguing that CMAs 3-8 are unacceptable because they employ the use of averages. That position is completely untenable for several reasons.

First, the general prohibition on the use of averages is set forth in NYSDEC guidance. [DER-10-"Technical Guidance for Site Investigation and Remediation"]. That guidance is not a law, nor is it a regulation; it is merely an agency "preference" that has no binding legal effect and is not based on widely-used sound scientific principles.

Second, if the use of averages in developing and evaluating CMAs was absolutely prohibited, then the Agencies would not have approved a CMS work plan where all but two CMAs to be evaluated were expressed in terms of both average and maximum concentrations of residual arsenic post-remediation. The development of CMAs using both averages and maximum concentrations as corrective measure criteria occurred in close consultation with the Agencies in a lengthy iterative process. It is completely disingenuous and patently unfair for the Agencies now to simply say "averaging is not permitted."

Third, the refusal to use averages is not based on sound scientific principles widely used in making risk management based remedial decisions. Average concentrations of metal in soils are used to identify residential yards for remediation at sites all across the country. For example, in Anaconda, Montana, the 1996 Record of Decision for the Community Soils Operating Unit required removal of yard soils where the average arsenic concentration in soil exceeded 250 mg/kg. USEPA is currently evaluating whether additional remediation is necessary to address lead impacts, and the alternatives being evaluated include the use of area-weighted averages for screening lead (USEPA 2012). In Butte, Montana, the residential action levels of 1200 mg/kg for lead and 250 mg/kg for arsenic are compared with average yard soil concentrations to determine if remediation is warranted (USEPA 2011). In Cascade County, Montana, all residential soils or road material exceeding an average of 100 mg/kg arsenic within an exposure area are excavated and replaced (USEPA & MDEQ 2009). In Tooele, Utah,

remedial actions for future development within a removal action area are based on a comparison of mean arsenic concentrations within each residential sampling zone (40,000 square foot area surrounding house) to a chronic risk-based concentration goal of 100 mg/kg (PCDG 2009; USEPA 2007).

Similarly, USEPA has also used an average concentration of arsenic in residential soils to confirm that remedial objectives have been met. Specifically, the 2010 Administrative Order on Consent, USEPA Region 7, Docket No. RCRA-07-2010-0031, for Doe Run Resources Corporation at 881 Main St. Herculaneum, Missouri states that: "Clean backfill material used for property restoration shall contain less than 150 mg/kg average lead; 22 mg/kg average arsenic; and 25 mg/kg average cadmium." (Appendix A, Statement of Work, Section II. Residential Property Remediation, Paragraph D). In other words, soil arsenic concentrations of 22 mg/kg on average in the residential area are acceptable post-remediation in this Missouri residential area.

Fourth, the Agencies' argument that leaving any arsenic above 20 ppm under CMAs 3-8 is unacceptable is completely inconsistent with the Agencies' own conclusion that leaving individual data points with more than 20 ppm present on a case-by-case basis will be allowed. The Agencies have already determined that no further action is required on many residential properties in the Middleport community with arsenic concentrations present in one or more samples at a concentration higher than 20 ppm. Specifically, in 2007, NYSDEC issued "No Further Action" letters to forty-six properties where thirty-three samples at twenty-seven locations exceeded 20 ppm. Similarly, in 2009, the Agencies excluded from the CMS entirely sixteen properties where sixty samples at thirty-nine locations exceeded 20 ppm.

Fifth, the rejection of the use of averaging again reflects the Agencies' failure to adhere to sound scientific principles when evaluating the human health risks which may be posed by the arsenic in soil in the Middleport community. For an elaboration of that point, see the sections of these Objections/Comments dealing with the assessment of human health risks posed by arsenic in soil.

c. The New York Test for Determining the Validity of Agency Remedial Decisions

The law in New York governing the validity of agency remedial decisions is a critical institutional imperative.

CMA 9 fails the test established by the New York State Court of Appeals for determining the validity of agency remedial decisions. The New York Court of Appeals recently decided a seminal case concerning the scope of the State's authority in making remediation decisions for contaminated sites. *New York State Superfund Coalition v. New York Department of Environmental Conservation*, 2011 NY Slip OP 8996, 2011 NY Lexis 3624 (Dec. 15, 2011). The case centers on the Part 375 Regulations, which provide that the goal of every cleanup project is to return the contaminated site to "predisposal conditions, to the extent feasible." 6

NYCRR 375-2.8. That concept is the cornerstone and overriding dispositive principle driving the Agencies' selection of CMA 9 in this case.

A careful reading of the decision reveals that the Court of Appeals acknowledged three critical limitations on the State's remedial decision-making authority in holding the rule lawful. Those three critical limitations are: (i) technological feasibility, (ii) cost-effectiveness, and (iii) procedural due process.

(i) Technological Feasibility

A remedy is technologically feasible if it is "suitable to site conditions, capable of being successfully carried out with available technology and implementable". 6 NYCRR §375-1.2(s).

(ii) Cost-Effective<sup>4</sup>

To determine whether a particular remedial measure is "cost-effective," one must:

(1) determine the extent to which the remedial measure (which may be limited) would reduce unacceptable risks to human health or the environment or would otherwise benefit human health or the environment; (2) determine the cost to achieve that reduction in human health and environmental risks or to confer those benefits; and (3) determine that the risk reductions and benefits are worthwhile given the amount of money that must be spent to achieve them.

(iii) Procedural Due Process

The responsible party is entitled to a hearing to adjudicate whether a remedy is in fact technologically feasible and cost-effective and, therefore, a remedy which the state may compel a responsible party to perform.

CMA 9 fails the cost-effective analysis required by the Court of Appeals. The uncontradicted evidence in the administrative remedy demonstrates:

- There is no meaningful difference in the amount of human health risk reduction achieved among any of the CMAs, including CMA No. 1 - No Further Action;

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<sup>4</sup> Note that the Part 375 Regulations require the remedy be "cost-effective" in order for it to be "feasible".  
6 NYCRR §375-1.2(s).

- All of the CMAs (except CMA 1 and CMA 5) will result in average residual arsenic concentrations in soil below the State's background-based targeted value of 20 ppm for residential property;

- It is estimated that CMA 9 has a direct cost of between \$68.6M and \$80.4M without soil tilling and between \$64.4M and \$74.2M with soil tilling (the differential in the range driven by whether a CAMU is authorized or not);

- CMA 9 has significant indirect costs to individual property owners and the community at large.

- All of the CMAs other than CMAs 2 and 9 range in cost from \$0.4 M (CMA No.1) to between \$42.9M and \$50.9M (CMA No. 8). (The differential in the range driven by whether a CAMU is authorized or not.) The marginal additional cost to perform CMA 9, as opposed to any of the other alternatives (except CMA 2) ranges from \$27.5/\$29.5M to \$68.2/\$80.0M.

In other words, in order to achieve a marginally insignificant further reduction in exposure/risk, or to drive the residual concentrations of arsenic after the remedy from one number already below the background value adopted by the Agencies to another value already below the value adopted by the Agencies, will require the expenditure of somewhere between thirty and eighty million additional dollars. Spending those additional dollars does not produce a corresponding benefit as required by the test established by the Court of Appeals.

Consequently, the Agencies have not demonstrated that CMA 2 or CMA 9 alone are capable of meeting applicable and legitimate institutional requirements. To the contrary, CMA 9 fails the fundamental legal test for remedial decisions established by New York's highest court. Therefore, the Agencies may not lawfully select CMA 9.

##### 5. Green Remediation Practices

The Agencies acknowledge CMA 9 is less favorable than the other proposed CMAs except CMA 2 in terms of waste minimization, resource conservation, ecological, and soil preservation. The Agencies attempt to discount that failure by arguing a number of steps will be adopted in carrying out the proposed remedy to mitigate these green remediation failures. That argument is insufficient and improper. The adoption of specific design and implementation measures to advance green remediation concepts is true of every other CMA than CMA 2 and the proposed CMA 9. In evaluating alternatives comparatively, the only operative question is -- how does each CMA square with basic green remediation concepts? The Agencies have acknowledged that CMA 9 is the least favorable of all of the alternatives on this critical element. Therefore, the Agencies should not select it.



6. Cost

CMA 9 is more costly than all other CMAs (including CMA 2) and the Agencies acknowledge this failure.<sup>5</sup> Instead of attempting to explain or justify the necessity for the added cost, the Agencies simply argue that cost is not terribly important because the public's health must be protected at all costs. That argument fails to address this reality: under the Agencies' own view of exposure/risk, no CMA results in post-corrective action conditions that reduce arsenic concentrations in soil to less than 1.0 ppm. Alternatively, under FMC's exposure/risk analyses, every CMA results in post-corrective action conditions within USEPA's acceptable risk range and meet the Agencies' background target.<sup>6</sup> Therefore, the key question is how much marginal exposure/risk reduction is achieved by each alternative CMA and at what incremental cost. The answer is -- ***there is virtually no public health benefit to be achieved by carrying out any of the CMAs.*** However, CMA 9 would cost tens of millions of dollars more, and carries more significant indirect costs than any of CMAs 3-8.

In sum, the Agencies have not demonstrated by an objective evaluation of evidence in the administrative record that CMA 9 is justified in light of its cost; the uncontradicted evidence demonstrates compellingly that it is not. If CMA 9 is adopted, the direct cost to reduce arsenic from one value, which is already below the targeted goals, to a lower number than the targeted goals, is between \$30,000,000 and \$80,000,000. Compelling FMC to incur that additional direct cost and the community to incur the substantial indirect costs of CMA 9 is irrational, arbitrary, capricious, an abuse of discretion, not necessary to protect human health or the environment, and not in accord with state and federal law.

7. Community-Property Owner Acceptance

The Middleport community has expressed its view that CMA 9 is unnecessary, unwarranted, and unwanted. Members of the community, along with public officials, all spoke out against CMA 9 at the public meeting on the Draft Statement of Basis held on June 27, 2012; a copy of the transcript is attached to, and made a part of, these Objections/Comments. For example, William Arnold, speaking as the Chairman of the Middleport Community Input Group ("MCIG") testified:

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<sup>5</sup> The Agencies did not prepare an independent estimate of what it will cost to perform CMA 9. FMC has commissioned such an estimate from Arcadis; it is attached to, and made a part of, these Objections/Comments. In addition, FMC has commissioned a cost-benefit analysis based on the absolute/direct cost of risk reduction produced by the various CMAs. A copy of that analysis is also attached to, and made a part of, these Objections/Comments.

<sup>6</sup> The Agencies summarily dismiss in a single paragraph the clear demonstration made in the CMS that the marginal differences in public health risk reduction or environmental benefit is extraordinarily small among all of the CMAs. [See: CMS; Appendix F; Figures 5-1 – 5.15b] No written NYSDOH evaluation of the risk assessment has been provided to FMC or otherwise published. Yet, uncontradicted evidence in the administrative record demonstrates that the distribution of arsenic remaining in the Middleport community after any of the CMAs evaluated in the CMS are performed will result in conditions protective of public health based on site-specific risk assessment and below the targeted background value of 20 ppm.

“[t]he MCIG has reviewed the Preliminary Statement of Basis, the Agency supplied Fact Sheet on Arsenic Soil Contamination FAQs for Middleport, New York, and the CMS Responsiveness Summary. The MCIG does not accept the Agencies’ proposed cleanup alternative as outlined in this Statement of Basis and has issues with other documents.”

Transcript at pp. 54-55.

Also, as New York State Senator George Maziarz testified: “[a]nd its just very clear, and I guess I am perplexed as to why the Agencies don’t see what the local people could see, that is that CMA No. 9 is just way, way, way over the top for this village.” Transcript at pg. 59. State Senator Maziarz went on to state that he “... strongly urges [the Agencies] to reconsider [its] decision making process.” Transcript at p. 60.

The consideration is simple: which CMA is acceptable to the community? CMA 9 is not.

### III. OBJECTIONS/COMMENTS TO EACH APPENDIX TO THE DRAFT STATEMENT OF BASIS

#### APPENDIX A

##### Corrective Action Objectives Discussion

The selection of CMA 9 is wrong when examined against the whole of the CAOs. The purpose and function of the CMS is to conduct a comparative evaluation of the various alternative CMAs. The CMS evaluation requires each alternative to be examined critically and comparatively against the specific criteria established in Attachment II of the AOC and the CAOs established by the Agencies pursuant to Attachment II of the AOC. Accordingly, in Section 7 of the draft CMS, each of the CMAs is compared to each of the others using the evaluation criteria and the CAOs.

The Agencies' discussion on CMA 9 and the CAOs is set forth in the Draft Statement of Basis at Appendix A - Corrective Action Objectives Discussion. The Agencies have not conducted a comparative analysis to determine whether CMA 9 is more or less effective in achieving the comprehensive CAOs established for this project. Instead, the Agencies have done two different things, neither of which is acceptable. First, the Agencies attempted to justify CMA 9 against each point in the CAOs as though each was an independent element. That is improper because the CAOs must be read together as an integrated expression of the sometimes competing or conflicting objectives of the project. Second, the Agencies assert that each CAO is met by CMA 9 without any comparative analysis between CMA 9 and the other CMAs and without any analysis or reference to specific evidence in the administrative record. That approach is inconsistent with the fundamental structure and purpose of the CAOs, which is to be an essential part of the comparative evaluation of alternatives designed to determine which of the CMAs best satisfies all or, on balance, most of the criteria and objectives.

#### 1. CAO No. 1

CAO No. 1 begins with a broad statement that the selected corrective action should:

“Protect human health and the environment relative to FMC-related contamination in accordance with and in consideration of applicable or relevant and appropriate laws, rules and guidance using site-specific data and information supported by multiple lines of evidence including site-specific risk assessment and based on current and reasonable anticipated future land uses. Reasonably anticipated future land uses will be identified in consultation with the community.”

CAO No. 1, paragraphs A through E, include a series of objectives expressed in more specific terms and are to be read as an integrated statement of the goals and objectives to be achieved by the remedy selected. CAO No. 1 is to be read as a whole, balancing the individual elements to identify the remedy which best achieves the comprehensive goals and the multiple objectives expressed in that CAO. This same fundamental principle applies to CAO Nos. 1 through 4.

The Agencies have not evaluated CMA 9 against CAO No. 1 using those principles. Instead, the Agencies have taken the approach that the SCOs reflected in the Part 375 Regulations and corresponding guidance (specifically, CP-51) are the overriding and dispositive forces for decision-making.<sup>7</sup>

The Draft Statement of Basis is issued in response to the Draft CMS, which was submitted pursuant to the AOC. The AOC is the legal instrument which governs this matter. The AOC was issued on the authority of 42 U.S.C. § 6928(h) and § 71-2727 of the New York Environmental Conservation Law (the "ECL"). The Part 375 Regulations are not regulations implementing those statutes. [See 6 NYCRR § 375 – 1.1]. Accordingly, the Part 375 Regulations and corresponding SCOs and CP-51 guidance are not directly applicable to this case. Consequently, the dictates of the Part 375 Regulations, the SCOs, and CP-51 guidance are only

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<sup>7</sup> Section V.B.6 of CP-51 provides, in relevant part:

**“RCRA Corrective Action Program:** The RCRA program was promulgated to regulate facilities that actively manage hazardous waste. DER administers the RCRA Corrective Action Program, with a goal of achieving soil cleanup levels at Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) that eliminate risks to public health and the environment (i.e., clean the site to unrestricted use) or control said risks (i.e., clean the site or unit(s) to the lowest possible soil cleanup objective, regardless of site use), to the extent feasible. This goal takes into account that certain units at the facility may be permitted to manage hazardous waste under New York State’s Hazardous Waste Management (HWM) regulations (6 NYCRR Part 373). The requirements of active HWM facilities, as well as the site’s history, will be considered when soil cleanup levels are determined. Selected remedies must be protective of public health and the environment. Soil cleanup levels will be selected using the following procedure.

(a) The remedial party shall evaluate, and if feasible, implement a cleanup utilizing Approach 1. Under this approach, the unrestricted SCOs apply to the entire soil matrix to the top of bedrock. For contaminants not listed in 6 NYCRR 375-6, a new or existing SSCO may be used.

(b) If DEC determines that achieving unrestricted SCOs is not feasible, the remedial party may evaluate other alternatives to remediate the site. In this event, the remedial party may propose soil cleanup levels in accordance with any of the general approaches. However, when considering restricted use soil cleanup levels, the remedial party shall apply the use category which is both feasible and least restricted. For purposes of this discussion, residential use is the least restricted category and industrial use is the most restricted category. A soil cleanup level between two different land uses (e.g., residential and restricted residential) may be determined to be feasible, and if selected, must be achieved.”

to be considered in selecting a remedy; they are not to be the exclusive and overriding factor. In considering the Part 375 Regulations, SCOs, and the CP-51 guidance in selecting a remedy, the Agencies are expressly required to use “site-specific data and information supported by multiple lines of evidence including site-specific risk assessment based on current and reasonably anticipated future land uses.” [CAO No.1.] The Agencies have not done so. Instead, the Agencies have ignored or rationalized away the other CAOs and simply applied the Part 375 Regulations and the SCOs as directed by CP-51.

The best example is the Agencies’ glaring failure to use any site-specific risk assessment information in connection with the remedial decision. The draft CMS contains a comprehensive human health risk assessment and other human health studies commissioned and performed by highly qualified expert professionals following scientific and technical protocols widely accepted and endorsed in the scientific community. The Agencies have summarily rejected that work without providing any written, objective evaluation of the work itself or its conclusions. Instead, the Agencies contend that “...the arsenic risk assessments performed by NYSDOH in conjunction with the NYS soil cleanup objectives to be appropriately site-specific in terms of addressing arsenic exposures in the Middleport and adequately conservative with regard to the assumptions used to characterize those exposures.” Draft Statement of Basis at p. 25. There is no basis to contend that generic/default-based risk assessments performed for the purpose of developing SCOs to be applied universally to every kind of site in every part of New York State are “site-specific” with respect to OU2/OU4 and OU5. By definition, the TSD for the SCOs is not, and cannot be, the *site-specific* risk work used to evaluate conditions and appropriate remedies for OU2/OU4 and OU5. [See the section of these Objectives/Comments dealing with the risk evaluation underlying the SCOs. Section 7.1; II. B.3.c. at pp. 10-11].

Another example of this failure is the Agencies’ assertion that all of the property (except the Wooded Parcel) which make up OU2/OU4 and OU5 either are, or reasonably can be anticipated to be, residential property. This is not based on an objective evaluation of current land use, local zoning maps and an independent objective evaluation of the community’s comments on this subject. Instead, the Agencies have blindly adopted the policy approach set forth in CP-51. (See footnote 7, above).

a. CAO No. 1. A.

CAO No. 1 A states that the remedy should: “achieve unrestricted use (*i.e.*, without the need for institutional engineering controls) of current and reasonably anticipated future residential properties within the study areas.” The Agencies argue that CMA 9 meets this objective because it adopts the use of the local background-based arsenic remedial goal for residential soils. However, all CMAs (other than CMA No. 1 [no further action] and CMA 2 [20 ppm point-to-point]) use background-based values for arsenic in soils to drive the remedy and determine whether corrective action goals have been met. Moreover, all CMAs (except CMA No.1) will achieve unrestricted use conditions for *residential properties*. Therefore, the selection of CMA 9 is not compelled by this directive.

b. CAO No. 1. B.

CAO No. 1 B states:

“Reduce and manage potential human health risks associated with FMC-related contaminants and soil keeping in mind that risk is a function of contaminant concentration and routes, likelihood of exposure and other factors such that: [e]xcess human health carcinogenic risks are reduced such that lifetime excess cancer risks fall within the range appropriate for residential communities (*i.e.*,  $10^{-4}$  to  $10^{-6}$ ); [h]uman health non-carcinogenic risks are reduced such that non-carcinogenic risks do not exceed the level appropriate for residential communities (*i.e.*, Hazard Index  $< \text{or} = 1.0$ ); and [t]he “point of departure” or starting point for corrective action risk-management decisions pertaining to arsenic in soil is the site-specific residential background considering site specific histories of use for current and reasonably anticipated future residential properties within the study areas.”

The Agencies conclude that CMA 9 is

“... in general conformance with these carcinogenic and non-carcinogenic goals with respect to arsenic exposure in a residential community. The 20 ppm arsenic remedial goal falls within the EPA excess cancer risk range of  $10^{-4}$  to  $10^{-6}$ . Also since the 20 ppm arsenic concentration is representative of site-specific residential background it is consistent with the “point of departure” goal for risk management decisions stated in CAO No. 1. B.”

Draft Statement of Basis at p. 38.

In essence, the Agencies have conceded that residual arsenic in soil at the 20 ppm level does not pose an unacceptable excess cancer risk. Under this analysis, all of the CMAs (except CMA No. 1 and CMA 5) achieve this objective; CMAs 3, 4, 6, 7 and 8 will produce average residual arsenic concentrations in the soil across the OU2/OU4 and OU5 areas at or below 20 ppm.

Finally, the Agencies use of 20 ppm as a remediation trigger to be applied on a point-by-point basis makes 20 ppm the end of the discussion, not the “...starting point for corrective action risk-management decisions,” as required by the CAO. The use in CMAs 3-8 of 20 ppm on average, coupled with the individual data point maximum values for residential properties, is necessary to actually meet this objective when it is read in conjunction with all of the other essential elements of the CAOs.

c. CAO No. 1.C.

CAO No. 1.C. states:

“With agreement by the property owner and based on current and reasonably anticipated future non-residential use of a property by combination of institutional and/or engineering control methods may be acceptable as effective measures as long as they are determined to render adequate, long-term protection of human health and the environment.”

The Agencies conclude CMA 9 satisfies this objective because it permits the use of institutional and engineering controls with respect to the Wooded Parcel. However, each CMA calls for the use of institutional and engineering control methods on non-residential property in OU2/OU4 and OU5 and, therefore, would also meet this objective. This is another example of the Agencies’ critical failure to use the CAOs in a comparative analysis of CMA 9 against all of the other corrective measure alternatives actually evaluated in the CMS.

d. CAO No. 1.D.

CAO No. 1.D. states: “Eliminate, reduce or control existing or potential adverse ecological impacts due to elevated concentrations of FMC-related contaminants in soil and/or sediments while balancing adverse psychological impacts that may result from the remediation activities themselves.”

Here, the Agencies make a conclusory assertion that the proposed remedy “represents an appropriate balance of short-term adverse and long-term beneficial environmental impacts especially when considering the fact that the proposed remedy will also require proper restoration of ecological habitats.” Draft Statement of Basis at p. 38. Again, the Agencies fail to compare short-term and long-term ecological impacts of CMA 9 against the impacts associated with the other CMAs. The CMS demonstrates that the ecological impacts associated with CMA 2 (the CMA 9 analog) are considerably more significant than the impacts associated with all of the other CMAs. Furthermore, the Agencies attempt to discount the adverse impacts associated with CMA 9 because properties will be restored after the remedy is not an independent basis to justify the selection of CMA 9; properties will be restored after the remedy under every CMA.

e. CAO No. 1.E.

CAO No. 1.E. states: “Eliminate, reduce, or control the potential for migration of FMC-related contaminants in soil and/or sediment while balancing adverse ecological impacts that may result from such measures themselves.”

The same objection and comment registered with respect to CAO No. 1.D applies here.

The selection of CMA 9 is not consistent with CAO No. 1

2. CAO No. 2

CAO No. 2. states: “Minimize disturbance and disruption of the community so that the character of the neighborhood can be maintained.”

The Agencies argue CMA 9 satisfies this objective because it provides “flexibility” that will, among other things, allow individual property owners to opt out of the remedy and for the preservation of mature trees. The Agencies essentially attempt to use the vague and undefined term “flexibility” as a magic bullet to overcome all of the very real and practical consequences of CMA 9. Those very real and practical consequences flow from the Agencies’ own assertion that CMA 9 is best because it will result in remediating the most properties and removing the most soil/arsenic from OU2/OU4 and OU5. The only certain consequences of CMA 9 are that: (i) it will subject the entire neighborhood to ten years of soil excavation and restoration work; (ii) it will destroy the character of the neighborhoods by cutting down many majestic trees that have stood for decades; and (iii) it will place a ten year burden on the community’s infrastructure and other resources.

The consequences of CMA 9 are best predicted by reference to the Interim Corrective Measures (“ICMs”) carried out on the 2003 West Properties and the 2007-2008 P Block Properties, where the Agencies also promised that “flexibility” would be employed. The result of both projects was significant disturbance, disruption and a complete denuding and change in the character of those neighborhoods.

There is simply no way to conclude that CMA 9, which is designed specifically to have the broadest and most extensive impact in OU2/OU4 and OU5, can meet the objective to “minimize disturbance and disruption of the community so that the character of the neighborhoods can be maintained.” Invoking the term “flexibility” will not alter this reality.

The selection of, CMA 9 is not consistent with CAO No. 2.

3. CAO No. 3

CAO No. 3 states: “Inform and engage affected property owners (*e.g.*, where contamination is located) and local residents and allow for meaningful participation throughout this clean-up process, including the CMS, and corrective action design and implementation phases.”



The Agencies argue that they have, and will continue to, engage affected property owners and local residents in meaningful participation in the decision-making process. As evidence, the Agencies point out that FMC's draft CMS report was made available for public comment prior to developing the Draft Statement of Basis, and that a public meeting was held and that numerous comments have been received. The net effect of that process was that the Department summarily rejected all comments submitted by the affected property owners, MCIG, and elected public officials.

The selection of CMA 9 is not consistent with CAO No. 3.

4. CAO No. 4

CAO No. 4 states:

“Consistent with the above objective, used best management practices of USEPA’s green remediation concepts (I.e., clean diesel technology, waste minimization, resource conservation, reduction of greenhouse gases and other air emissions (e.g., by using alternative energy sources and/or fuel-efficient technology, minimizing truck trips, etc.) and ecological and soil preservation) to reduce the demands placed on the environment (“footprint”). In keeping with the green remediation strategies site cleanup and reuse can mutually support one another by leveraging infrastructure needs, sharing data, minimizing demolition and earth-moving activities, reusing structures and demolition materials, and combining other activities that support timely and cost-effective cleanup and reuse. Early consideration of green remediation opportunities offers the greatest flexibility and likelihood for related practices to be incorporated throughout the project life.”

The Agencies argue that CMA 9 meets the objectives of CAO 4 because they will adopt a number of elements intended to “make it more in line with Green Remediation concepts.” That argument follows from the premise that CMA 9 is, by its very nature, inconsistent with Green Remediation concepts. In fact, other than CMA 2, it is the least consistent of the CMAs with respect to Green Remediation concepts and principles.

The selection of CMA 9 is not consistent with CAO No. 4.

## DRAFT STATEMENT OF BASIS

### APPENDIX B

#### Evaluation and Selection of Proposed Transport and Disposal

FMC submits the following specific Objections/Comments in response to the Agencies' Appendix B evaluation and selection of methods to transport and dispose of soil excavated pursuant to the various CMAs:

1. The Agencies significantly understate the technical performance and reliability of the CAMU by failing to acknowledge and consider facts and data which are essential to an objective evaluation. Specifically,

(a.) The Agencies' technical performance and reliability assessment fails to acknowledge or consider that: (i) construction of the northern portion of the proposed CAMU (Phase 1 area; green hatch on Figure 4) without a liner is expressly authorized by the CAMU regulations; (ii) approximately half of the Phase 1 CAMU area (outside the limits of the former Eastern Surface Impoundment ("ESI)) was covered with a low permeability composite clay/sand/topsoil cover (two-foot minimum thickness) as part of the 1987-1988 North Site Cover construction activities (within orange outline on Figure 4); (iii) non-hazardous soil/materials generated from ICMs conducted by FMC were placed within the limits of the ESI and over an area of the North Site Cover that surrounds the ESI (collectively, the "ESI Fill Area"); and (iv) the North Site Cover limits contaminant migration and enhances the reliability of the on-site disposal option.

(b.) The Agencies' technical performance and reliability assessment fails to acknowledge or consider that:

(i) No hazardous wastes, liquid wastes, municipal wastes or wastes from the FMC plant operations will be placed in the CAMU;

(ii) The levels of contaminants in the soil that would be placed in the CAMU are very low and do not exhibit the characteristics of a hazardous waste (*e.g.*, contaminants do not leach from the soil at a level above the RCRA regulatory limits);

(iii) Arsenic tends to bind to soil particles and is typically immobile, especially at the levels found in the soil/materials that have been placed in the ESI Fill Area, and will be placed in the CAMU;

(iv) Soil/materials have been/will be placed on top of the existing ground surface well above (and not in contact with) the below grade level where groundwater saturates the soil or bedrock;

(v) Soil/materials have been/will be placed over the existing two-foot thick low permeability cover (North Site Cover) in a portion of the Phase 1 CAMU area and over a liner system installed in the Phase 2 CAMU area;

(vi) The engineered final cover for the CAMU will include a hydraulic barrier that will shed rainwater and substantially reduce infiltration;

(vii) Rain water or snow melt that may infiltrate or percolate through soil/materials placed in the CAMU will be captured and contained by FMC's blast-fractured bedrock collection trenches and groundwater well recovery systems, which include a series of groundwater collection trenches and fourteen groundwater extraction wells, most of which are located along the northern and eastern boundary of the plant site; the collected groundwater is then treated at FMC's Water Treatment Plant; and

(viii) FMC will continue routine operations of the existing groundwater remedial systems and monitoring of groundwater beneath and around the proposed CAMU under FMC's Groundwater Monitoring Program ("GMP").

(c.) The Agencies' technical performance and reliability assessment of the liner requirement fails to acknowledge or consider that: (i) extensive data has been collected as part of the RCRA Facility Investigation ("RFI") and ICMs; (ii) that data has consistently demonstrated that ICM soil placed in the ESI Fill Area does not have the propensity to leach arsenic or other contaminants, and does not exhibit the toxicity leaching characteristics of a hazardous waste; (iii) these data are presented in the respective ICM work plans and ICM completion reports, and include thirty-two soil samples analyzed for arsenic and other constituents by the Toxicity Characteristic Leaching Procedure ("TCLP"); Table 1 summarizes the RFI soil and waste characterization data collected for ICM soils placed in the ESI Fill Area; Attachment D-1A of Appendix D to the May 2011 Draft CMS Report summarizes soil and groundwater data available for the proposed Phase 1 and Phase 2 CAMU areas; and (iv) the Draft Statement of Basis does not specify what additional testing would be required and the rationale for any additional testing in the face of the extensive existing data base.

2. Similarly, the Agencies' overstate the difficulties in implementing a CAMU by failing to acknowledge critical facts and data which are essential to an objective evaluation. Specifically,

(a) The Agencies' technical implementability assessment states that: (i) further investigation may be needed and a CMS/alternative analysis will be necessary for Solid Waste Management Unit ("SWMU") Group C to determine whether construction of a CAMU in that area would be consistent with the corrective measures for SWMU Group C; and (ii) "the Department has determined that it is premature to locate a CAMU in this area until completion of the investigation and remedy selection process for this area." However, FMC submitted a Draft RFI Report to the Agencies in January 1999 that contained RFI data obtained for SWMU Group C, as well as for the remaining areas of the plant site. Since 1999, the Agencies have not notified FMC of any data gaps associated with the RFI for the plant site or SWMU Group C. FMC submitted a Draft CAMU Application to the Agencies in March 2008, and the Agencies provided comments in November 2009, but did not identify the need for any additional investigation or completion of a CMS/alternative analysis for SWMU Group C. The Agencies' new requirement that the SWMU Group C investigation and a CMS/alternative analysis be completed before making a CAMU decision is untimely, unfair and completely unwarranted. Additionally, the Agencies' insistence that this process be completed within eighteen months of the finalization of the Final Statement of Basis, and that the CAMU be ready to receive waste within twenty-four months of the finalization of the Final Statement of Basis, is arbitrary.

(b) The Agencies' technical implementability assessment states that locating the CAMU at an alternate location on the plant site may avoid potential complications associated with the need for a SWMU Group C investigation and CMS/alternative analysis. However, the RFI and CMS process have not been completed for any portion of the plant site. It is logically inconsistent for the Agencies' to reject the proposed CAMU location because the investigation and corrective action analyses for that area are (purportedly) incomplete and then suggest that that problem can be overcome by moving the unit to another location which is in the very same status.

3. The Agencies understate the safety advantages of the CAMU by failing to acknowledge or consider facts and data which are essential to an objective evaluation. Specifically, the off-site disposal option would require an additional 11,400 truck trips (an estimated total of approximately 684,000 miles) to transport excavated soil to a commercial landfill; over-the-road trucking presents a real safety and accident risk to the general public.<sup>8</sup>

4. The Agencies overstate the short-term human exposure potential associated with the CAMU, and understate those risks associated with off-site disposal. Specifically, the Agencies' assert that the CAMU may pose a slightly higher short-term human exposure potential than the off-site disposal option since the CAMU would be

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<sup>8</sup> See the New York State Department of Transportation report of 2009-2010 average vehicular accident rates (website <https://www.dot.ny.gov/divisions/operating/oss/highway/accident-rates>).

located in closer proximity to residential neighbors than a typical commercial landfill. However, both the on-site and off-site disposal options would require the transportation of waste soil to a temporary staging area in the eastern portion of the plant site within the footprint of the proposed Phase 1 CAMU area. Consequently, short-term human exposures for the surrounding residential neighborhood associated with the CAMU will be similar to the off-site disposal option. Considering that the off-site disposal option requires more waste transportation, and puts the waste soil in close proximity to residential neighborhoods along the truck or rail transportation routes, the off-site disposal option presents a higher short-term human exposure potential. Since long-term human exposures associated with both on-site and off-site disposal options are similar, the on-site disposal option is more favorable overall with respect to human health than the off-site disposal option.

5. The Agencies' assert that the CAMU may not satisfy the institutional criteria because there is uncertainty over whether such a unit is authorized under the Town of Royalton's zoning ordinance. There is no uncertainty on this point: local zoning ordinances are absolutely pre-empted by federal and state law in connection with the decision to deploy a CAMU as part of a RCRA Corrective Action program. Moreover, even if the Town of Royalton zoning ordinance was not completely pre-empted (and it is), a CAMU is a permitted use of the FMC facility property under various zoning law principles, including principles governing prior non-conforming uses.

6. The Agencies understate the resource/material consumption associated with off-site disposal. Specifically, the Agencies' Green Remediation Practices, Resource Consumption assessment, states that the off-site disposal option is comparable to the on-site disposal option in terms of reducing resource/material consumption. This finding appears to be based primarily on a consideration of the resources/materials used for construction of the liner/leachate collection system and final cover. However, the off-site disposal option will involve the use of additional resources and materials for construction/operation of a temporary soil staging area (double handling of materials) for loading into larger trucks or rail cars for transport to the commercial landfill. In addition, since the off-site disposal option would require an additional 11,400 truck trips (an estimated total of approximately 684,000 miles) to transport excavated soil to a commercial landfill, more resources (*i.e.*, fuel) would be used than for the on-site disposal option.

7. The Agencies reject without explanation or basis, FMC's projected costs for on-site disposal. FMC's projected costs included costs for long-term maintenance, leachate collection, inspection and environmental monitoring of the CAMU for a period of thirty years (consistent with NYSDEC guidance). It appears that the Agencies have failed to acknowledge or consider that whether or not a CAMU is designated at the FMC facility, FMC will continue to: (i) pump and treat contaminated groundwater; (ii) maintain and monitor the facility's groundwater extraction and treatment system; (iii)

inspect and maintain the ESI Fill Area and North Site Cover; and (iv) implement FMC's GMP. Therefore, these on-going facility operating and maintenance costs were not included in the projected long-term CAMU costs. The present worth of the long-term care costs was calculated using an interest rate identified in the Office of Management and Budget website (<http://www.whitehouse.gov/omb/circulars/a094/a094.html#8>). FMC's costs were otherwise estimated using current and generally accepted engineering cost estimation methods and, as detailed in the Draft CMS Report, accurately reflect the significant disparity in costs between the on-site and off-site disposal options.

8. The Agencies' conclude that a CAMU may not satisfy the community acceptance criteria. However, neither the federal nor the state regulations which govern the Agencies' CAMU decision-making authority include community acceptance as a necessary criteria. The community's views on the subject are to be considered; communities do not have authority to veto the use of a CAMU for obvious policy reasons.

In summary, the Agencies have not conducted a fair and objective evaluation of the methods to transport and dispose of soil excavated pursuant to the various CMAs. Moreover, the Agencies' tentative preference for the use of the CAMU is subject to limitations, qualifications and conditions which are unnecessary, patently unfair, and which the Agencies must know are practically impossible to satisfy.

## DRAFT STATEMENT OF BASIS

### APPENDIX C

#### Tree Preservation Plan Minimum Statement of Work Elements

FMC submits the following specific Objections/Comments in response to the Agencies' Appendix C Tree Preservation Plan ("TPP"). The Objections/Comments included below are intended to supplement the Objections/Comments in the balance of the Draft Statement of Basis.

The Agencies' requirements for a TPP include (Page 49, fourth bullet) a "detailed set of RPZ excavation procedures which are designed to maximize the potential for tree preservation, including hand excavation techniques, seasonal excavation during dormant growth periods, and partial segmented excavation of each RPZ spread out over time (years) with adequate interruptions to allow for recovery" (emphasis added).

Any disturbance (*e.g.*, soil removal, soil tilling, soil compaction) within the tree root protection zone ("RPZ") could jeopardize the health or stability of an otherwise healthy tree. For this reason, the most common approach in soil remediation projects is to remove the tree and replant a new tree. The project-specific CAOs issued by the Agencies in March 2009 state that one of the goals of the corrective measures is to "[m]inimize disturbance and disruption of the community so that the character of the neighborhoods can be maintained." The preservation of trees is understood to be an important element in maintaining the character of the Middleport community and an affected property. Therefore, a study of potential tree preservation measures was included as a task in the CMS Work Plan. Tree preservation measures were evaluated by FMC's environmental consultant (ARCADIS of New York, Inc. or "ARCADIS") using Middleport-specific information and in consultation with AMEC Geomatrix and other experts (*i.e.* local arborists, such as The Tree Doctor). The results of the evaluation were presented in FMC's interim CMS-related deliverable entitled, "Corrective Measures Study Technical Memorandum - Evaluation of Tree Preservation Measures for Suspected Air Deposition and Culvert 105 Study Area" (February 2010) (the "Technical Memorandum"), and incorporated into the Draft CMS.

For those select trees where the property owner chooses to attempt tree preservation, and for which preservation is determined to be feasible and appropriate, FMC concluded, based on consultation with its experts that limited depth excavation (*i.e.*, maximum depth of 6-inches) using either mechanical or pneumatic pressure, completed in one continuous effort, would present the best opportunity to preserve the tree. This finding is based upon the practicability of implementation, probability for tree survivability, tree structural stability concerns, and safety concerns for workers, residents, and the community. The advice of a qualified arborist, relying on site-specific information, will be considered during the design

phase in the development of soil excavation methods, depths and area required to preserve a tree during the design activities of the corrective measures implementation.

As stated in the Technical Memorandum, the possibility of excavating soil to depths greater than 6-inches within the tree RPZ depends on: (i) the vertical and horizontal extent of soil removal required to achieve soil cleanup goals; (ii) property-specific factors (*i.e.*, soil characteristics, owner input); and, (iii) tree-specific factors (*i.e.*, tree species, age, health, stability, location and condition).

Based on information presented in the Technical Memorandum, consultation with FMC's experts, and Middleport-specific information, FMC concluded that implementing a partial segmented excavation approach over a multi-year period is not practical and would be unlikely to improve tree survivability to a sufficient level to reduce the risks associated with tree damage and potential uprooting. FMC and FMC's experts (identified above) are not aware of any documented successful application of a partial segmented excavation approach for environmental remediation.



## DRAFT STATEMENT OF BASIS

### APPENDIX D

#### Arsenic Soil Standards

FMC submits the following specific Objections/Comments in response to the Agencies' Appendix D discussion of arsenic soil standards in various states. The Objections/Comments included below are intended to supplement the Objections/Comments in the balance of the Draft Statement of Basis.

In support of its discussion of CAO #1, the Agencies note that they looked at other available information and multiple lines of evidence that their proposed alternative achieves CAO #1, including "arsenic standards in 14 other states (see Appendix D)." In Appendix D, the Agencies state that "over the past 20 years there have been various attempts to unify soil remediation cleanup standards across the U.S.," but then discuss the variation in arsenic clean up levels at sites in the eastern vs. western part of the U.S. Finally, the Agencies state "[t]he Department recently reviewed current cleanup levels in 14 states and found that the 20 ppm cleanup value selected for this site is higher than or equal to the state-wide calculated health based cleanup value in all 14 reviewed states for residential use and 11 out of the 14 reviewed states for all other uses." This statement and the associated table misrepresent the levels listed as "cleanup levels," and incorrectly imply that these values are applied in the same manner as the Agencies propose to apply CMA 9.

Even a casual review of the values in the Agencies' table reveals that the values listed cannot all be cleanup levels because four of the values listed for residential or unrestricted use are more than ten-fold lower than natural background levels throughout the U.S. (Maryland, Maine, Mississippi, and Oregon). They cannot be cleanup levels because, among other things, no clean fill could be found that would achieve such low levels. These values are clearly risk-based screening levels rather than cleanup levels. Risk-based screening values and other preliminary remediation goals are not cleanup goals, but just starting points for site investigation.

Moreover, to put the Appendix D Table in perspective, it is critical to understand how the various states determine compliance with soil clean-up standards. Many of the states listed in the table use averaging to determine compliance. For example, Pennsylvania uses the median concentration in the entire area of contamination as the point of compliance with their "medium specific concentrations". Delaware and Maryland determine that the standard has been achieved using the 75%/10x rule (seventy-five percent of the samples from the source area must be at or below the standard, and no sample may be more than ten times the standard). Furthermore, in Maryland, the value presented by the Agencies is not used as a cleanup standard because background concentrations are higher; the same is true for Maine. Connecticut uses the upper confidence limit of the mean concentrations of samples from the source area as a compliance test (and no single value more than two times the standard). Rhode Island also uses

an estimate of the mean concentration for compliance, and Florida specifies that the upper confidence limit of the mean for the exposure unit may be used to determine compliance. Consequently, many of the states listed in the table evaluate compliance with their respective values using approaches which the Agencies' here have rejected in an attempt to justify CMA 9.

It also appears that several of the values in the Agencies' table are inaccurate. Specifically, the New Jersey arsenic soil cleanup criterion for arsenic is 20 ppm, not the 19 ppm listed in the table; and the most commonly applied Maine state remedial action guidelines for soil are (or will soon be) ten-fold higher than those presented by the Agencies. Some state criteria (whether screening or cleanup criteria) are also more consistent with CMAs 3-8 than CMA 9. For example, Florida's arsenic state cleanup target level incorporates a default assumption that soil arsenic relative bioavailability is 0.33. Some states include a higher "not-to-exceed" level, as well as their stated criterion.

The Agencies briefly discuss site cleanup levels, and suggest that some western states have approved higher soil arsenic cleanup levels (of 200 ppm and higher) for industrial land uses. In fact, there are multiple examples of site-specific *residential* soil cleanup levels for arsenic higher than 20 ppm, and up to 250 ppm. Montana has a state-wide action level for soil arsenic of 40 ppm, and offers several examples of substantially higher residential cleanup levels that are based on the application of site-specific studies in the derivation of risk-based cleanup levels.

In Appendix D, the Agencies proceed to discuss the derivation of the 20 ppm background value for Middleport. As they note, this value was derived in 2003 based on then known historical land use in Middleport. However, FMC has subsequently identified additional historical records that support altered land use assumptions and higher background values. The Agencies also note in Appendix D that the 20 ppm value is intended to represent the 95<sup>th</sup> percentile of the background dataset. Given this admission, there is no basis for the Agencies to insist that a cleanup level of 20 ppm must be applied as a not-to-exceed value.

Considering all of these factors, Appendix D does not support the selection of CMA 9; it undermines it.

#### IV. CONCLUSION

For all of the foregoing technical, scientific, legal, and policy reasons, the selection of CMA 9 as the corrective action approach to OU 2/4 and OU 5 is wrong and will unnecessarily prolong the process leading to the actual performance of corrective action. FMC respectfully urges the Agencies in the strongest possible terms to reconsider and, ultimately, withdraw the CMA 9 determination. FMC remains committed to working cooperatively with the Agencies to select a corrective measures alternative for OU2/4 and OU5 that is justified by the best science, is consistent with governing law, and is acceptable to affected communities and stakeholders. Accordingly, on June 22, 2012, FMC requested a meeting with the Agencies to take place after the close of the public comment period to discuss the Draft Statement of Basis and these comments and objections. FMC looks forward to that meeting.

Respectfully Submitted,  
FMC Corporation

BY: \_\_\_\_\_



Shawn Tollin  
Project Coordinator

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