

**BEFORE THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 REGION III
 1650 Arch Street
 PHILADELPHIA, PENNSYLVANIA 19103-2029**

Municipal Sanitary Authority of the City of New Kensington, 120 Logans Ferry Road New Kensington, PA 15068,	:	Proceeding Under Section 309(a) of the Clean Water Act, 33 U.S.C. § 1319(a)
City of Arnold 1859 Fifth Avenue New Kensington, PA 15068,	:	Docket Nos. CWA-03-2009-0230, CWA-03-2009-0231, CWA-03-2009-0232,
City of Lower Burrell 2800 Bethel Street Lower Burrell, PA 15068,	:	CWA-03-2009-0233, CWA-03-2009-0234, and CWA-03-2009-0235
Lower Burrell Municipal Authority Schreiber and Bethel Street Lower Burrell, PA 15068,	:	
City of New Kensington, 301 Eleventh Street New Kensington, PA 15068, and	:	Administrative Order For Compliance On Consent
Plum Borough Municipal Authority 4555 New Texas Road Pittsburgh, PA 15239,	:	
Respondents.	:	

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I. STATUTORY AUTHORITY

1. This Administrative Order for Compliance on Consent (AOC) is issued under the authority vested in the United States Environmental Protection Agency (EPA) under Section 309(a) of the Clean Water Act (CWA or Act), 33

U.S.C. § 1319(a). The Administrator of the EPA has delegated this authority to the Regional Administrator of EPA Region III, who in turn has redelegated it to the Director of the Water Protection Division of EPA Region III. This AOC shall supersede the previous Administrative Orders issued to the Municipal Sanitary Authority of the City of New Kensington, hereinafter referred to as ("MSANK") and the City of Arnold by EPA on, respectively, September 26, and August 30, 2007. This Administrative Order on Consent ("AOC") is entered into this 11 day of December, 2009, by and between the United States Environmental Protection Agency ("EPA") and, MSANK, the City of Arnold, the City of Lower Burrell, the City of New Kensington, and the Borough of Plum, severally.

II. FINDINGS

2. Respondents neither admit nor deny the following Findings.
3. Each of the Respondents: the City of Arnold, the City of Lower Burrell, the Lower Burrell Municipal Authority, the City of New Kensington, the Plum Borough Municipal Authority (hereinafter each individually referred to as "Municipality" and collectively as "Municipalities"), and MSANK are persons as defined in Section 502(5) of the Act, 33 U.S.C. § 1362(5).
4. Section 301(a) of the Act, 33 U.S.C. § 1311(a) prohibits the discharge of any pollutant (other than dredged or fill material) by any person from a point source into waters of the United States except in compliance with the

National Pollutant Discharge Elimination System ("NPDES") program under Section 402 of the Act, 33 U.S.C. § 1342, and 40 C.F.R. Part 122.

5. Section 502(6) of the Act, 33 U.S.C. § 1362(6), defines "pollutant" to include, inter alia, sewage, sewage sludge, biological material and industrial, municipal and agricultural waste.

6. Section 502(12) of the Act, 33 U.S.C. § 1362(12), defines "discharge of a pollutant" to include "any addition of any pollutant to navigable waters from any point source."

7. Section 502(14) of the Act, 33 U.S.C. § 1362(14) defines "point source" as "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well [or] discrete fissure from which pollutants are or may be discharged."

8. A combined sewer system (CSS) is a wastewater collection system owned by a State or municipality (as defined by Section 502(4) of the CWA) which conveys sanitary wastewaters (domestic, commercial and industrial wastewaters) and storm water through a single-pipe system to a publicly owned treatment works (POTW) (as defined in 40 C.F.R. §403.3). A combined sewer overflow (CSO) is the discharge from a CSS at a point prior to the POTW treatment plant. CSOs are point sources subject to NPDES permit requirements and other requirements of the CWA, including both technology-based and water quality-based requirements.

9. Section 402(q)(1) of the Act, 33 U.S.C. § 1342(q)(1), provides that each NPDES permit, order, or decree issued under Section 402 after December 21, 2000, for a discharge from a municipal combined storm and sanitary sewer shall conform to EPA's Combined Sewer Overflow Control Policy, April 11, 1994, 59 Fed. Reg. 18688-18698 (CSO Policy).

10. The purpose of the CSO Policy is "to coordinate the planning, selection, design and implementation of CSO management practices and controls to meet the requirements of the CWA and to involve the public fully during the decision making process." 59 Fed. Reg. 18688, 18689 (April 19, 1994). Among the objectives of the CSO Policy is "[t]o bring all wet weather CSO discharge points into compliance with the technology-based and water quality-based requirements of the CWA." *Id.*

11. The CSO Policy requires: 1) implementation of the nine minimum technology-based controls (NMCs) set forth in the CSO Policy, no later than January 1, 1997; and 2) development and implementation of a long-term CSO control plan (LTCP) that will ultimately result in compliance with the requirements of the CWA, including applicable water quality standards. The LTCP must include a post-construction water quality monitoring program adequate to verify compliance with water quality standards and protection of designated uses as well as to ascertain the effectiveness of CSO controls.

12. The City of Arnold and MSANK each have CSSs that experience periodic

discharges of untreated sewage and storm water from CSOs under their ownership and located within their jurisdictional borders. These CSOs discharge to the Allegheny River, a waters of the United States.

13. The City of Lower Burrell routes sanitary wastewater through a separate sanitary collection system that the Lower Burrell Municipal Authority owns and which contributes to the discharge of untreated sewage and storm water through the MSANK's CSOs. The Plum Borough Municipal Authority routes sanitary wastewater through its collection system that contributes to the discharge of untreated sewage and storm water through the City of Arnold's and MSANK's CSOs. The City of New Kensington owns and operates a storm water collection system that contribute to the discharge of untreated sewage and storm water through the City of Arnold's and MSANK's CSOs.

14. Therefore, each Respondent "discharges" "pollutants" from a "point source" as those terms are defined under Section 502 of the CWA, 33 U.S.C. § 1362.

15. The CSO Policy contemplates that all municipalities tributary to a CSS operated by a different municipality or authority will cooperate with the development and implementation of an LTCP.

16. On October 2, 2007, MSANK received an Administrative Order from the EPA alleging that MSANK failed to implement an adequate LTCP. EPA determined the LTCP to be inadequate because, among other things, it did

not specify how MSANK would measure the effectiveness of the CSO controls and it did not provide interim milestones and a financing plan to fund the projects required to address the CSOs.

17. In September 2007, the City of Arnold received an Administrative Order from the EPA that alleged that the City had failed to implement an approved LTCP. The Pennsylvania Department of Environmental Protection ("PADEP" or "Department") has informed EPA that PADEP is unsure that the City has correctly identified all of the CSOs from the City's CSS.

18. The Respondents have agreed to provide the information necessary to the development of an approvable LTCP(s) to control CSOs, to coordinate with each other, and to implement the LTCP(s).

III. ORDER FOR COMPLIANCE

Therefore, this _____ day of _____, 2009, EPA ORDERS and Respondents consent to conduct the following activities:

WORK TO BE PERFORMED

19. As set forth below and in accordance with the provisions of Appendices A through H, Respondents shall perform the work described in Paragraphs 20 through 31. Appendices A through H are attached hereto and incorporated into this AOC by reference,

20. Public Participation Plan - In accordance with the requirements set forth

in Appendix A hereto, the Respondents shall within six (6) months of the effective date of this AOC develop and submit to EPA and PADEP for review and comment a Public Participation Plan to ensure that the public served by the Regional Sewer System is actively involved in the development of the LTCPs.

21. Provide Information to the Public - In accordance with the requirements set forth in Appendix A hereto, starting within sixty (60) days of the effective date of this AOC, each Municipality and MSANK shall use informational newsletters and meetings to convey information to citizens within their respective sewersheds on the status of the LTCPs, municipal cooperation, and steps that citizens may take to protect the receiving waters.

22. Signage - In accordance with the requirements set forth in Appendix A hereto, within six (6) months of the effective date of this AOC, the City of Arnold and MSANK shall post signs adjacent to each of their CSO locations.

23. Internet Information - In accordance with the requirements set forth in Appendix A hereto, beginning within six (6) months of the effective date of this AOC, each Municipality shall establish and provide to MSANK on a semiannual basis the information needed to update the MSANK's web site in accordance with existing protocols for the respective Municipalities. In accordance with the requirements set forth in Appendix A hereto, beginning within six (6) months of the effective date of this AOC, each Municipality,

with the exception of the City of Lower Burrell and the Lower Burrell Municipal Authority, shall establish and provide to the City of Arnold on a semiannual basis the information needed to update the City of Arnold's web site in accordance with existing protocols for the respective Municipalities.

24. Sewer System Investigation - In accordance with the requirements set forth in Appendix B hereto, within one (1) year from the effective date of this AOC, each Municipality and MSANK shall complete the components of an investigation of its sewer system as set out in Appendix B, Paragraphs 48, 49, and 50.

25. Sewer System Deficiency Corrections - In accordance with the requirements set forth in Appendix B, Paragraph 51, hereto, within twenty-four (24) months from the effective date of this AOC, each Municipality and MSANK, with the exception of the defects and conditions described in Appendix B, Subparagraphs 51.a.iv and 51.b.iii, shall initiate corrections to their combined and separate sanitary sewer systems. Each Municipality and MSANK shall initiate the correction of the defects and conditions described in Appendix B, Subparagraphs 51.a.iv and 51.b.iii within 60 (sixty) days of discovery. For the purpose of this AOC, "initiate" shall mean put out for public bid.

26. Sewer system Mapping - In accordance with the requirements of Appendix C hereto, within one (1) year of the effective date of this AOC, the

Respondents shall develop a comprehensive sewer system map.

27. Flow and Rainfall Monitoring - In accordance with the requirements of Appendix D hereto, within nine (9) months of completing the mapping required by Paragraph 26, MSANK and the City of Arnold shall submit a plan to conduct flow and rainfall monitoring. Upon completion of flow and rainfall monitoring in accordance with the requirements of Appendix D, they shall submit a report of the results of such flow and rainfall monitoring.

28. Combined Sewer Overflow Pollutant Monitoring – Concurrent with the flow monitoring required by Paragraph 27 and in accordance with the requirements of Appendix E hereto, MSANK and the City of Arnold shall develop and implement a combined sewer overflow pollutant monitoring plan.

29. Hydrologic and Hydraulic Model - In accordance with the requirements of Appendix F hereto, within six (6) months of completion of the flow monitoring required by Paragraph 27, the City of Arnold and MSANK shall develop and implement a hydrologic and hydraulic model to simulate the hydrologics and hydraulics of flows in the Regional Collection System. The “Regional Collection System” shall mean a collection system(s), or a portion of a collection system, that conveys wastewaters to the MSANK Sewage Treatment Plant (“STP”) and/or to any of the CSOs that are components of the combined sewer system operated either by MSANK or by the City of Arnold.

30. LTCP Development

a. Within twenty-four (24) months of completion of the flow and rainfall monitoring required by paragraph 27, MSANK and the City of Arnold, shall, in accordance with the terms of this AOC and Appendix G, submit final LTCPs to EPA and PADEP for review. Plum Borough and the Cities of New Kensington and Lower Burrell agree to provide data to assist with the development of the LTCP.

b. For purposes of the tasks required by provisions set out in this AOC and for the Appendices, the Long Term Control Plan submitted by MSANK or the City of Arnold to EPA and/or PADEP may also address other wet weather problems including, but not limited to, hydraulic overloading of collection system, sanitary sewer overflows ("SSOs"), basement backups, and/or bypassing not in accordance with permit terms within the MSANK or the City of Arnold sewersheds.

31. NMCs - Within sixty (60) days of this AOC's effective date, MSANK, the City of New Kensington, and the City of Arnold will submit a report to EPA describing how the Respondents have implemented the NMCs for the Regional Collection System to date and what the results have been. Appendix H states the requirements for implementing the NMCs.

IV. GENERAL PROVISIONS

32. Issuance of this Order shall not be deemed an election by EPA to forego

any administrative, civil, or criminal action to seek penalties, fines, or any other appropriate relief under the Act for the violations cited herein. EPA retains the right to seek any remedy available to it under the law for any violations cited in this Order.

33. Compliance with the terms and conditions of this Order shall not in any way be construed to relieve any Respondent of its obligation to comply with all applicable provision of federal, state, or local law, nor shall it be construed to be a determination of, any issue related to any federal, state, or local permit. Compliance with this Order shall not be a defense to any actions subsequently commenced for any violation of federal laws and regulations administered by EPA, and it is the responsibility of the Respondents to comply with such laws and regulations. This Order does not constitute a waiver or modification of any of the requirements of the CWA, including the terms or conditions of any issued permit, all of which remain in full force and effect.

34. Violation of the terms of this Order may result in further EPA enforcement action for the underlying violations including, but not limited to, initiation of judicial proceedings that allow for civil penalties of up to \$32,500 per day, 33 U.S.C. §§ 1319(b) and (d), for each day of violation, 40 C.F.R. Part 19, and/or for the criminal sanctions of imprisonment and fines of up to \$50,000 per day, 33 U.S.C. § 1319(c). Any penalties may be increased

pursuant to 40 C.F.R. Part 19. If any Respondent fails to comply with the requirements of this AOC, after good faith efforts by the other Respondent to seek compliance by the non-complying Respondent and upon notice to EPA by another Respondent, EPA will use its best efforts to see that the non-complying Respondent returns to compliance.

35. Each of the undersigned representatives of Respondents certifies that he or she is fully authorized by the party represented to enter into the terms and conditions of this AOC and to execute and legally bind that party to it.

36. Effect of AOC - In signing this AOC, MSANK and each Municipality specifically reserves and does not waive any rights it may otherwise have under any existing Operating Agreements entered into by such Municipality and MSANK. In the event that there may be a conflict between the provisions of this AOC and any provisions of any such Operating Agreement, the provisions of this AOC shall apply and supersede those of any such Operating Agreement.

37. Data Collection and Submission - Unless a Paragraph provides otherwise, all data collected shall be retained and shall be provided to EPA and PADEP upon request by the EPA or DEP. The Municipalities and MSANK shall provide the data within fifteen (15) days upon receiving a request to the EPA and PADEP at the addresses listed in Paragraph 40. GIS data shall be stored and shall be provided in Environmental Systems Research Institute

(ESRI)-compatible format, as specified in Appendix C. The CCTV data collected under Paragraph 24 shall be stored in digital format and shall be provided in that format. All other data collected shall be formatted and stored in a relational database (Open Database Configuration compliant), such as Microsoft Access, Microsoft Excel or equivalent, and provided in that format. Flows shall be calculated and reported as millions of gallons per day (MGD), rather than cubic feet per second (CFS). Data shall be expressed to three (3) decimal places (x.xxx).

38. Combination of Submissions - This AOC is not intended to preclude any of the Respondents from agreeing among themselves, as a matter of efficiency, that one or more of Respondents may take the lead in producing any of the reports, plans, maps, or other submissions required by this AOC. In addition, this AOC is not intended to preclude any of the Respondents from agreeing among themselves, as a matter of efficiency, to jointly produce any of the reports, plans, maps, or other submissions this AOC requires them to individually produce. Such agreement(s), however, does not waive the individual Respondent's responsibility to meet the requirements of this AOC and the Clean Water Act. Said agreement(s) shall not serve as a defense to any enforcement action concerning violations of the Act.

39. Certification - All documents or reports submitted to EPA by a Respondent pursuant to this AOC shall be signed by a ranking elected official

of the Respondent, or a person who has been duly authorized as a representative of such executive officer or elected official in accordance with 40 C.F.R. § 122.22(b), and shall include the following certification that the information contained in such document or report is true, accurate, and not misleading:

I certify under penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

40. Correspondence with EPA - All correspondence with the EPA concerning this AOC, including the submission of plans and reports, shall be sent to the following address:

Robert Campbell
NPDES Enforcement Branch (3WP42)
United States Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

All correspondence, including the submission of plans and reports, with EPA shall be copied for the PA Department of Environmental Protection and sent to the following address:

Paul Eiswerth, CSO Coordinator
Pennsylvania Department of Environmental
Protection
400 Waterfront Drive,
Pittsburgh, PA 15222-4745
Phone: 412-442-4000 Fax: 412-442-4328

41. Correspondence with the Municipalities and Authorities - All
correspondence with the Municipalities and MSANK concerning this AOC shall
be addressed to:

Daniel H. Rowe, Jr., Manager
Municipal Sanitary Authority
of the City of New Kensington
120 Logans Ferry Road
New Kensington, PA 15068

Mayor
City of Arnold
1859 Fifth Avenue
New Kensington, PA 15068

Mayor
City of Lower Burrell
2800 Bethel Street
Lower Burrell, PA 15068

Chairperson
Lower Burrell Municipal Authority
Schreiber and Bethel Street
Lower Burrell, PA 15068

Mayor
City of New Kensington
301 Eleventh Street
New Kensington, PA 15068

and

Chairman
Plum Borough Municipal Authority
4575 New Texas Road
Pittsburgh, PA 15239

Each Municipality and MSANK shall notify the EPA whenever there is a change in the contact person's name, title, or address. Service of any notice or any legal process for any purpose under this AOC, including its enforcement, may be made by mailing a copy by first class mail to the above addresses.

42. Force Majeure

a. Respondents agree to perform all requirements of this AOC within the time limits established under this AOC unless the performance is delayed by a *force majeure* event. For purposes of this AOC, a *force majeure* event shall mean any event arising from causes beyond the control of Respondents or any entity controlled by Respondents, including but not limited to their contractors and subcontractors, which delays or prevents performance of any obligation under this AOC despite Respondents' best efforts to fulfill the obligation. *Force majeure* does not include the financial inability to complete the work or increased cost of performance.

b. If any event occurs or has occurred that may delay the performance of any obligation under this AOC, whether or not caused by a *force majeure* event, Respondents shall notify EPA orally within seven (7) days of when Respondents first knew that the event might cause a delay. Within ten (10)

days thereafter, Respondents shall provide to EPA in writing an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to minimize the delay; a schedule of implementation of any measures to be taken to prevent or mitigate the delay or effect of the delay; Respondents' rationale for attributing such delay to a *force majeure* event if they intend to assert such a claim; and a statement as to whether such event may cause or contribute to an endangerment to public health, welfare or the environment. Failure to comply with the above requirements shall preclude Respondents from asserting any claim of *force majeure* for that event for the period of time of such failure to comply and for any additional delay caused by such failure.

c. If EPA agrees that the delay or anticipated delay is attributable to a *force majeure* event, the time for performance of the obligations under this AOC that are affected by the *force majeure* event will be extended by EPA for such time as EPA determines is necessary to complete those obligations. An extension of time for performance of the obligations affected by the *force majeure* event shall not, of itself, extend the time for performance of any other obligation. If EPA does not agree that the delay or anticipated delay has been or will be caused by a *force majeure* event, EPA will notify Respondents in writing of its decision.

43. Modifications - No changes, additions, modifications, or amendments of

this AOC shall be effective unless they are set out in writing and signed by the parties hereto affected by the change, modification or amendment.

44. Effective Date - The effective date of this Order as to each Respondent shall be the date it is signed by EPA.

45. Termination - The obligations of this AOC for a Municipality or MSANK shall terminate when EPA determines that the Municipality or MSANK has complied with the terms and conditions of this AOC.

**FOR THE MUNICIPAL SANITARY AUTHORITY OF
THE CITY OF NEW KENSINGTON**

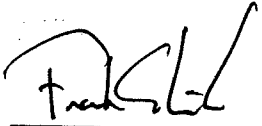
John J. Mahrk CHAIRMAN MSANK
Name
Title

Carroll O'Flaherty
Name SECRETARY
Title

[Signature]
Name
Attorney for the Municipality

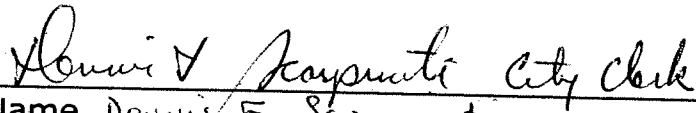
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FOR THE CITY OF NEW KENSINGTON



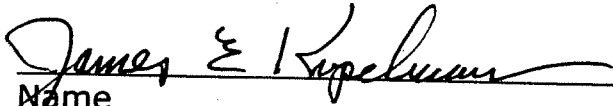
Name Frank E. Linc

Title Mayor



Name Dennis F. Scarpiniti

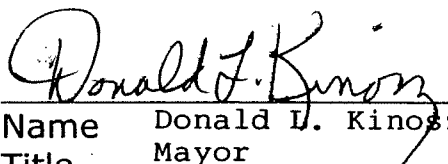
Title city clerk



Name

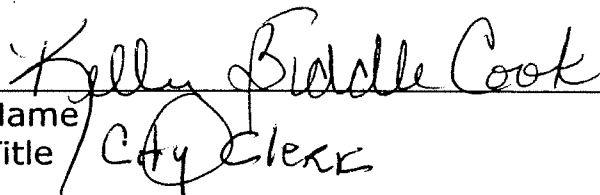
Attorney for the Municipality

FOR THE CITY OF LOWER BURRELL



As authorized by Council 6-8-09

Name Donald D. Kinosh
Title Mayor



Name Kelly Biddle Cook
Title City Clerk



Name Stephen Zakopce
Attorney for the Municipality

FOR THE LOWER BURRELL MUNICIPAL AUTHORITY

Edward Bloch, CHAIRMAN

Name EDWARD BLOCH
Title

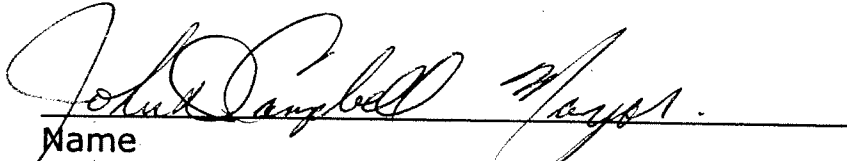
DA Wohlber, SECRETARY

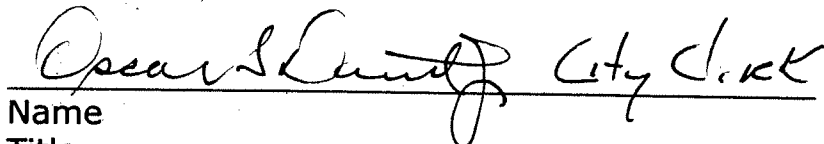
Name DAVID A. WOHLBER
Title


R.E. Valasek

Name R.E. VALASEK
Attorney for the Authority

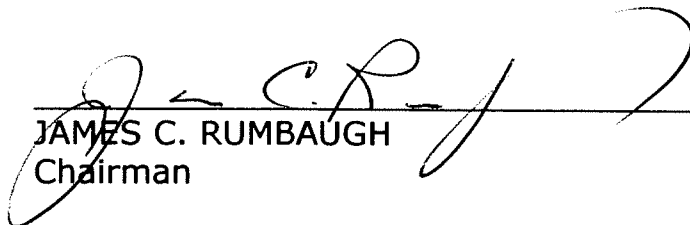
FOR THE CITY OF ARNOLD


Name
Title



Name
Title


Name
Attorney for the Municipality


FOR THE PLUM BOROUGH MUNICIPAL AUTHORITY



JAMES C. RUMBAUGH
Chairman



HOWARD THEIS
Manager



Name BRUCE E. DICE
Attorney for the Authority

FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

A handwritten signature in black ink, appearing to read "Jon Capacasa", written over a horizontal line.

JON CAPACASA
Director
Water Protection Division

APPENDIX A

Public Participation, Notification and Outreach

46. Public Participation

- a. Public Participation Plan – The Respondents shall develop a “Public Participation Plan” to ensure that the public served by the Regional Collection System is actively involved in the development of the LTCP.
- b. Content of Public Participation Plan - The Public Participation Plan shall include proposed activities for providing the public with notice and information regarding the development of the LTCP, including (a) the goals of the LTCP, (b) the types of remedial controls and remedial activities available and being considered in the LTCP to meet the requirements of the Clean Water Act and this AOC, (c) the process for evaluating the various remedial controls and remedial activities in the LTCP, and (d) opportunities to comment upon the various remedial controls and remedial activities under consideration for the LTCP. In addition, the Public Participation Plan shall include proposed activities for providing the public with notice and information regarding the alteration of any milestone or deadline established or required by this AOC.
- c. Informational Newsletters and Meetings - Each Municipality and MSANK shall produce and distribute informational newsletters to any persons or organizations requesting such information on a quarterly basis. On at least an annual basis, they shall hold informational meetings open to the public. In

the newsletters and meetings, they shall convey information on the status of the LTCP, municipal cooperation, and steps that citizens may take to protect the receiving waters. In lieu of publishing some or all of their own newsletters, the Municipalities and MSANK may use third parties to provide this information through newsletters.

47. Public Notification and Outreach

a. MSANK and the City of Arnold shall post a sign adjacent to each of their Combined Sewer Outfalls as identified in their NPDES Permits and any unpermitted CSOs.

b. Each sign shall include the following language:

These waters receive sewage from sewer overflows as a result of rain, snowmelt, and other events. Please limit contact with these waters at these times. For more information, please call [NAME to be provided] at [phone # to be provided]. Please report the observation of any discharge occurring during dry weather to that number.

c. The sign shall

- i. Be in compliance with applicable local ordinances;
- ii. Be legible from a distance of at least 15 feet;
- iii. Be positioned so that its lettering is visible from the adjacent waterway; and
- iv. Where the public accesses the area around the Combined Sewer Outfall (as evidenced by informal walking paths, swimming areas, etc.),

have identical lettering on both sides so that it can be seen from the land side of the sign as well.

d. Each Municipality shall establish, annually update, and annually provide a map containing, but not limited to, the following information. The purpose of the maps is to update the MSANK's and the City of Arnold's web sites (The City of Lower Burrell and the Lower Burrell Municipal Authority need not provide a map to the City of Arnold.):

- i. Identification of the different sewersheds;
- ii. All Combined Sewer Outfalls locations in the sewer collection system with all locations where there are posted public advisory signs;
- iii. All continuous flowing streams and rivers within the sewersheds with Combined Sewer Outfalls and/or Separate Sanitary Sewer Outfalls. The map shall identify the streams' and rivers' known, existing use;
- iv. Major recreational areas; and
- v. Contact information for reporting Dry Weather Discharges from the CSOs, and solids and floatables accumulation.

APPENDIX B

Sewer System Investigation

48. Physical Survey/Visual Inspection

a. Each Municipality and MSANK shall complete a physical survey/visual inspection of its sewer system that directly or indirectly conveys wastewater to the MSANK STP and/or to any of the CSOs that are components of the combined sewer system operated either by MSANK or the City of Arnold, excepting any portion of the system constructed or reconstructed since January 1, 2000, for which the Municipality or MSANK has records of post construction municipal inspection consistent with the requirements of this Appendix. The Respondent must be able to demonstrate through documentation that the municipal inspection meets the requirements of this Appendix.

b. Combined Sewers - The physical survey/visual inspection shall include all accessible manholes, exposed sewer lines and other visible sewer appurtenances, including, but not limited to, siphon chambers, pump stations, exposed force mains, combined sewer regulators, diversion chambers and accessible outfall pipes and structures. The physical survey/visual inspection shall identify all defects related to safety, structural instability, accumulated sediment and debris deposits, the conveyance of streams, flow from springs and receiving stream back flow, visible flow

bottlenecks, evidence of present or prior surcharging (excepting areas where surcharging has been intentionally induced in accordance with NMCs requirements) or overflows, and any other condition that compromises or diminishes the hydraulic capacity of the combined sewer system. A physical survey/visual inspection shall be performed for all accessible manholes (both their interiors and exposed exteriors) and of each sewer line connection at such manholes. The physical survey/visual inspection shall note all documented manholes that cannot be located, visually or with metal detectors, and areas where additional manholes need to be constructed.

c. Separate Sanitary Sewers - The physical survey/visual inspection shall include, all accessible manholes, exposed sewer lines and other visible sewer appurtenances, including, but not limited to, features within the separate sanitary sewer system intended to release excess flow during wet weather events ("SSO Structures"), siphon chambers, pump stations, and exposed force mains. The physical survey/visual inspection shall identify all defects related to safety, structural instability, accumulated sediment and debris deposits, visible flow bottlenecks, evidence of present or prior surcharging or overflows, the location of all SSO Structures, evidence of inflow and infiltration, and any other condition that compromises and/or diminishes the hydraulic design capacity of the separate sanitary sewer system. A physical survey/visual inspection shall be performed for all accessible manholes (both

their interiors and exposed exteriors) and of each sewer line connection at such manholes. The physical survey/visual inspection shall note all documented manholes that cannot be located, visually or with metal detectors, and areas where additional manholes need to be constructed.

49. Sewer Line Cleaning and Closed Circuit Television (CCTV)

Internal Inspection

- a. Each Municipality and MSANK shall perform cleaning of its sewer system immediately prior to this CCTV inspection, unless the sewer line walls are sufficiently clean to allow an internal inspection by CCTV to detect structural defects, misalignment, infiltration sources, and root intrusions.
- b. Previous sewer line CCTV inspection data may be used to meet the requirements of this Paragraph if the inspection was completed on or after January 1, 2000, and meets the following conditions:
 - i. The inspection indicated that the sewer had no defects causing a restriction in flow or conditions allowing excessive infiltration or inflow into the system and/or significant root intrusions;
 - ii. The documentation for the inspection is readily available and includes a visual record of observations, a written summary and conclusions;
 - iii. There are no basement backups along the sewer line segment;and

- iv. The sewer line segment does not have chronic surcharges.
- c. Previous CCTV inspection submitted to the Agency for past work credit need not be transferred into a standard format.
- d. Using CCTV, each Municipality and MSANK shall inspect its sewer lines in that portion of its sewer system that directly or indirectly is tributary to the MSANK STP and/or to any of the CSOs that are components of the combined sewer system operated either by MSANK or the City of Arnold that meets one or more of the following conditions:
 - i. Are 10 inches in diameter or greater for separate sanitary sewers and 15 inches or greater for combined sewers;
 - ii. Are trunk sewer segments which are a final conveyance to the MSANK combined sewer system, the Arnold sewer system, or the MSANK STP;
 - iii. Are associated with chronic basement flooding, chronic surcharge areas or chronic maintenance areas, unless, where for combined sewer systems, the surcharge is initiated intentionally as part of the Municipality's or MSANK's NMCs compliance effort;
 - iv. Where feasible, are downstream of flow diversion structures (Priority will be given to structures exhibiting dry weather overflows.);
 - v. Require additional information suitable for model development purposes; and/or

- vi. Are deemed a priority for inspection by a Professional Engineer.
- e. Combined Sewer Systems - As a result of CCTV inspection, each Municipality and MSANK shall record:
 - i. All defects that allow the entrance of infiltration to its combined sewers;
 - ii. All structural defects;
 - iii. All defects that compromise or diminish the carrying capacity of the combined sewer lines; and
 - iv. All defects in siphons, combined regulator structures, diversion chambers, and accessible outfall pipes and structures.
- f. Separate Sanitary Sewer Systems - As a result of CCTV inspection, each Municipality and MSANK shall record:
 - i. All defects that allow the entrance of infiltration and inflow to its separate sanitary sewers;
 - ii. All structural defects;
 - iii. All defects that compromise or diminish the carrying capacity of the separate sanitary sewer lines;
 - iv. All defects in siphons; and
 - v. Conditions and/or modifications of the separate sanitary sewer system that allow for SSOs.
- g. The CCTV records required by Appendix B, Subparagraphs 49.e and f

shall also include audio/video documentation with a written summary to include, but not be limited to, the location of roots, defective joints, defective pipes, sewer line depressions, break in lateral connections, grease accumulations and sediment accumulations. Additionally, this CCTV record shall include a location reference and incorporate a defect code and defined level of severity or grade associated with each condition noted in the inspection report. These codes and grades shall utilize a uniform ranking and rating system such as the NASSCO system.

h. MSANK and the Municipalities shall document any structure they are unable to inspect via CCTV. The documentation shall include the location and function of the structure, the reason they were unable to inspect, and any follow-up actions they have taken to ascertain the condition of the structures.

50. Sewer System Dye or Equivalent Testing

a. Each Municipality and MSANK shall for its respective collection system that directly or indirectly is tributary to the MSANK STP and/or to any of the CSOs that are components of the combined sewer system operated either by MSANK or the City of Arnold:

i. Complete dye testing or testing by other methods equivalent to dye testing (including, where appropriate, the use of smoke testing to detect roof leaders) of all structures to determine the sources of surface storm water such as roof leaders, yard drains, and driveway

drains within its separate sanitary sewer system that may be directly or indirectly tributary to the MSANK STP and/or to any of the CSOs that are components of the combined sewer system operated either by MSANK or the City of Arnold excepting any portion of the system constructed or reconstructed since January 1, 2000, with records of dye testing conducted in accordance with this Paragraph.

- ii. Document any illegal connections to the separate sanitary sewer system from structures or catch basins in the GIS map or a digital spreadsheet such as Microsoft Excel.

Previous dye test results completed of structures, and previous CCTV, physical inspection, dye testing, and/or smoke testing of private and municipal catch basins, documenting positive results (i.e., illegal connections) may be used to satisfy the requirements of this Paragraph, if the illegal connections were removed and documented, or if the Municipality has initiated and is diligently prosecuting a legal or equitable action against the owner of the property in order to seek a resolution of the violation(s). Documentation of the corrections and/or legal actions shall be maintained and made available upon request.

51. Sewer System Deficiency Corrections

- a. Combined Sewers - Each Municipality and MSANK shall:
 - i. Complete the repair of all structurally deficient manholes and all

defective siphons, pump stations, force mains, combined sewer regulators, diversion chambers and all outfall pipes and structures identified pursuant to Paragraphs 48, 49, and/or 50 of this Appendix;

ii. Eliminate the conveyance of streams by the sewer system, flow from springs, and receiving stream backflow into the sewer system, as appropriate, based on a cost effectiveness analysis;

iii. Replace or repair all sewer lines identified during sewer line cleaning and internal inspection completed pursuant to Paragraphs 48, 49, and/or 50 of this Appendix that restrict flows to the extent wet weather backups or overflows occur at locations other than permitted outfall structures; and

iv. Within sixty (60) days of discovery, initiate repair of all significant structural defects identified pursuant to Paragraphs 48, 49, and/or 50 of this Appendix such as, sewer lines with collapsed section(s), section(s) with the crown and/or invert missing, dirt pipe (missing pipe), void in the backfill, complete sewage flow blockage, and any other defect that the overseeing Professional Engineer determines to need immediate attention.

b. Separate Sanitary Sewers - Each Municipality and MSANK shall:

i. Complete the repair of all structurally deficient manholes that accept storm water and/or surface water inflow and all defective

siphons, pump stations, and force mains identified during the tasks completed pursuant to Paragraphs 48, 49, and/or 50 of this Appendix;

ii. Remove all streams, flow from springs, and receiving stream back flow from the sewer lines as identified pursuant to Paragraphs 48, 49, and/or 50 of this Appendix; and

iii. Within sixty (60) days of discovery, each Municipality and MSANK shall:

(1) Initiate repair of all significant structural defects such as sewer lines with collapsed section(s), section(s) with the crown and/or invert missing, dirt pipe (missing pipe), void in the backfill, and any other defect that the overseeing Professional Engineer determines to need immediate attention; and

(2) Repair any structural defect or other condition that causes a complete sewage flow blockage resulting in an overflow, basement flooding, or that causes a public health nuisance. If the Municipality/MSANK determines the specific sewer system defect or condition that causes a public health nuisance cannot be repaired within sixty (60) days, the Municipality/MSANK shall notify the EPA, in writing, within fifteen (15) days of discovery of the defect or condition, and provide a plan and the most practicable schedule for repair or remedial action of the specific

defect or condition for the EPA's comment.

APPENDIX C

Sewer System Mapping

52. Introduction

- a. The Sewer System Mapping required in this AOC is intended to provide four categories of information for inclusion on comprehensive sewer maps:
 - i. General information on the configuration of sewer manholes and their connecting pipes to provide field verification for sewer system mapping;
 - ii. General information on the condition of sewer manholes and pipes to identify any nonstructural operation and maintenance (O&M) needs such as, but not limited to, accumulated sediment and debris deposits, shifted manhole frames, or unsafe manhole steps;
 - iii. General information regarding sewage pump stations; their configuration, operation, hydraulic capacities, and back-up power sources; force mains; and inverted siphons and their condition; and
 - iv. Identification of defects related to structural stability, excessive infiltration or inflow, evidence of present or prior surcharging or overflows, hydraulic restrictions, and any other conditions that would compromise and/or diminish the capacity of the separate sanitary and/or combined sewer system.

b. In order for each Municipality and MSANK to create an updated, comprehensive sewer map of the separate sanitary and/or combined sewers within its sewer system, directly or indirectly tributary to the MSANK STP and/or to any of the CSOs that are components of the combined sewer system operated either by MSANK or the City of Arnold, each Municipality and MSANK may build upon the base sewer mapping that has been developed to date. The comprehensive sewer map shall be submitted in Environmental Systems Research Institute (ESRI) compatible format, and shall indicate, at a minimum the location of the sewer lines, the direction of flow, the size of the sewer lines, the sewer line material, the locations where flows from other municipalities enter the sewer system and where flows exit the sewer system to other municipalities, the field verified location of manholes and the location of catch basins connected to the sewer system (identified by a comprehensive numbering or lettering system), the location of pump stations, force mains, and siphons, and the location of streams or drainage ways tributary to the sewers. These maps shall be created using Geographic Information System (GIS) mapping and verified using Global Positioning System (GPS) ground monitoring or land surveying methods. The GIS mapping shall include the use of a specified attribute tables, a data dictionary, etc., as defined in this protocol. The maps must include street names, municipal boundaries, and streams. Additionally, maps should include

points of interconnection with other municipal or private sewer systems and any known points of sewer overflow including CSOs and SSOs, including manhole overflows. The investigations conducted in preparing these maps shall include the location of any buried or lost manholes through metal detection, CCTV or excavation, the identification of all unsewered residential areas within the sewer system and the associated estimated population of these unsewered residential areas.

c. Upon review of their records, each Respondent may incorporate previous sewer system mapping data into its sewer map if the data meets the requirements of this Appendix.

53. Technical Requirements

a. All significant sewer system structures such as manholes, regulating chambers, CSO and SSO outfalls, pump stations, or other appurtenances should be located to a minimum horizontal accuracy of three (3) feet.

Coordinates should be recorded as "real coordinates" in State Plane Pennsylvania South NAD83. Vertical survey information should reference the NGVD88 datum. A spatial data projection file should be included in ESRI format noting the projection and datum used.

b. Structure locations may be determined using the following alternative methods:

i. Existing "as built" sewer system maps, as long as the maps have

been field-verified, digitized, and rectified to the existing GIS base maps;

- ii. Using a GPS where conditions allow; or
- iii. Using traditional land surveying methods.

c. In some geographic areas traditional surveying methods may be more productive than using GPS and, in some cases, a combination of above methods may be required. With regard to GPS data collection, additional information such as the number of readings used to define a point, the standard deviation of values, and the type of data correction should be recorded. The type of data correction can be either real time, post process, or raw. The type of equipment and operator should also be included. Adherence to this minimum acceptable requirement will ensure that field verified data throughout the area are consistent.

d. For most of MSANK's and any Municipality's sewer system, the precise elevations of manhole covers and manhole inverts are not required.

Manhole and pipe inverts and rim elevations are required to be surveyed to a minimum vertical accuracy of 0.25 feet. Dam heights, overflow pipe elevations, regulator structures, structures that directly affect hydraulic performance, and SSO and/or CSO outfalls of significant sewer system components are required to be surveyed to a minimum vertical accuracy of 0.10 feet. The manhole inverts and rim elevations of all accessible manhole

structures on significant trunks sewers shall also be surveyed to a minimum vertical accuracy of 0.10 feet in the following instances:

- i. The separate sanitary sewer pipe has a diameter of 10 inches or greater;
- ii. The combined sewer pipe has a diameter of 15 inches or greater;
- iii. The sewer pipe is connected to an MSANK interceptor, in which case survey data will be required for a distance of three (3) manholes above the point of connection with MSANK;
- iv. The sewer pipe connects to an interceptor within the City of Arnold that conveys sewage to the MSANK system, in which case survey data will be required for a distance of three (3) manholes above the point of connection;
- v. Are associated with chronic basement flooding, chronic surcharge areas or chronic maintenance areas, unless, where for combined sewer systems, the surcharge is initiated intentionally as part of the Municipality's or MSANK's NMCs compliance effort;
- vi. Where feasible, are downstream of flow diversion structures (Priority will be given to structures exhibiting dry weather overflows.);
and
- vii. The sewer pipe segment needs more precise invert and slope data to meet the objectives of the hydraulic capacity evaluations.

54. GIS Attribute Data

a. This protocol will serve as a guide for the creation of an updated GIS regional sewer map. It is critical that all Respondents use standard field names and formats so the mapping data from each Respondent can be easily and cost effectively integrated to form a complete system wide map for the Regional Collections System. The Respondents shall use a common attributes table.

b. The Data Dictionary defines the most common fields and field values. This data dictionary shall serve as a form of metadata or "data about the data" to include names of the data, information about the attributes, and information about any relational tables to the spatial datasets. While the Data Dictionary does not include all possible fields or field values, the primary aspects of mapping a sewer system are covered. The primary aspects that are covered in the Dictionary relate to the physical description and location of the appurtenances and may not be complete enough for an evaluation. If additional fields must be added, for example, the manhole inspection reports, then those fields or values should be described in the metadata, that is, the documentation accompanying the GIS data.

55. Metadata - Metadata documentation should be compiled and maintained. Metadata documentation should explain the accuracy, source, projection and datum, update schedule, etc., for the GIS data layers.

Metadata should conform to the standards developed by PaMagic, an organization developing statewide standards, or comparable metadata standards based on the Federal Geographic Data Committee's (FGDC) Geospatial Positioning Accuracy Standards. The entire Metadata Workbook can be found at www.fgdc.gov/metadata.

APPENDIX D

Flow and Rainfall Monitoring

56. With the assistance of each Municipality MSANK and the City of Arnold shall develop the Regional Collection System Flow and Rainfall Monitoring Plan (Flow and Rainfall Monitoring Plan). The Flow and Rainfall Monitoring Plan shall, at a minimum, meet the following requirements:

- a. The Flow and Rainfall Monitoring Plan shall include a list of locations for the installation of flow meters. The Municipalities and MSANK shall use the flow meters to measure Average Daily Dry Weather Flows, Peak Dry Weather Flows, Average Wet Weather Flows during a wet weather event, and Peak Wet Weather Flows for each monitored rainfall event and to validate the Hydrologic and Hydraulic Model used to quantify and characterize the total overflow volumes during each rainfall event.
- b. "Average Daily Dry Weather Flows" shall mean the average daily flow during a monitoring period recorded on days without precipitation with at least a 24-hour dry weather antecedent period. "Peak Dry Weather Flow" shall mean the instantaneous maximum dry weather flow recorded during the monitoring period (day, month, and year). "Average Wet Weather Flows" shall mean the average flow recorded during a precipitation event followed by a "buffer" draining period, or the travel time of the overland flow generated at the most remote part of the watershed to the farthest downstream point of

the watershed. "Peak Wet Weather Flows" shall mean the maximum flows occurring during the wet weather events.

c. During each rainfall event, MSANK and the Municipalities shall take readings in 15-minute intervals.

d. The Flow Monitoring Plan shall include all of the following activities:

- i. A GIS map showing the location of all flow monitoring sites;
- ii. A delineation of the sewered area for each flow monitor;
- iii. The flow monitoring technique to be employed to include;
 - (1) Dimensioned sketches;
 - (2) Profile selections and plan views of each monitoring manhole;
 - (3) Configurations of flow monitoring equipment to be installed; and
 - (4) Sewer GIS maps illustrating the flow monitoring location, the adjacent upstream and downstream manholes and connection pipes and the Outfall, if any;
- iv. Manufacturer of the flow monitors to be used at each site;
- v. Monitoring crew experience conducting flow monitoring;
- vi. Approaches to monitoring at, or near, overflows;
- vii. Provisions for inspecting, maintaining, and calibrating the flow meters;

viii. Provisions for coordinating flow monitoring activities so that flows are measured with meters that are capable of comparable accuracy and are similarly calibrated; and

ix. Method to be used in approximating overflow volume, frequency and duration.

e. The Municipalities and MSANK shall monitor flow at all points of connection with municipalities and/or authorities whose separate sanitary and/or combined sewer systems are tributary to that of each Municipality and at all points of connection at which the sewer system of each Municipality becomes tributary to the separate sanitary and/or combined sewer system of another municipality or authority. Best professional judgment may be applied to determine points for flow monitoring where, for example, a collector sewer or trunk sewer follows or crisscrosses municipal and/or authority boundaries creating multiple points of connection between the same municipalities and/or authorities. In such cases, monitoring points shall be established such that flows are monitored where the sewer effectively first enters into each Municipality's sewer system from that of another municipality and/or authority and where the sewer finally leaves each Municipality's sewer system and flows into that of another municipality and/or authority. The Flow and Rainfall Monitoring Plan shall identify each monitoring point by identifying those connections common to the collection

systems as identified in the sewer mapping project (Appendix C).

f. Monitoring flow from all CSOs listed in the MSANK and the City of Arnold NPDES Permits - If the flow cannot feasibly be measured with one or more flow monitoring devices, each Municipality and MSANK shall provide the date and estimated time, duration, rate and amount of the CSO. For the purposes of this subparagraph, the availability of differential monitoring, in which upstream and downstream flows are monitored and the overflow rate is calculated as the difference, is a feasible flow monitoring alternative. The Flow and Rainfall Monitoring Plan shall indicate how the Municipalities and MSANK will monitor the flows from all the CSOs.

g. The Flow and Rainfall Monitoring Plan shall describe how the Municipalities and MSANK will coordinate the flow monitoring activities required by this Paragraph for their separate sanitary and combined sewer systems. Monitoring within a given sewershed shall be conducted at the same time within all municipalities in that sewershed, and flows are measured with compatible devices and protocol-compliant methodology. The EPA's comments on the Flow and Rainfall Monitoring Plan, which proposes a coordinated sewershed-based approach, may be contingent upon adequate demonstration and documentation of the coordination of the flow monitoring program with the other municipalities in the sewershed.

h. The Flow and Rainfall Monitoring Plan shall include a description of how

the Municipalities and MSANK will conduct field investigations of their flow monitoring sites to do the following:

- i. Ensure that designated monitoring sites can provide representative, accurate, and reliable data;
 - ii. Ensure that monitoring sites conform with the provisions of its Flow and Rainfall Monitoring Plan; and
 - iii. Verify that hydraulic, site access, safety, and maintenance conditions are suitable for flow monitoring.
- i. The Flow and Rainfall Monitoring Plan shall include a description of how the Municipalities and MSANK will use redundant level sensors, where feasible, at each CSO/SSO Structure Meter. To ensure true redundancy, where feasible, each sensor will employ a different technology from other sensors at the same site.
- j. The Flow and Rainfall Monitoring Plan shall include a description of how the Municipalities and MSANK will monitor the flow at municipal pump stations where these are included in the hydrologic and hydraulic model, by either A) monitoring all flows going into each municipal pump station, or B) monitoring the discharge at each municipal pump station.
- k. Rainfall Monitoring
- i. Simultaneous with the flow monitoring required under this Appendix, rainfall shall be monitored within the using a network of rain

gauge stations. The Flow and Rainfall Monitoring Plan shall identify the location of each station.

ii. Rainfall measurements shall be obtained using this network to do the following:

(1) Provide representative, accurate, and reliable data over a range of wet weather events for at least ninety (90) percent of the scheduled operating time for the aggregate of all rain gauge stations installed;

(2) Correlate various precipitation events with Wet Weather Flows within the Regional Collection System; and

(3) Provide data for use in development and validation of the Hydrologic and Hydraulic Model.

i. The Municipalities and MSANK shall schedule the flow and rainfall monitoring activities during a period of sufficient time to account for the seasons' effects on the combined sewer system flows. Flow and rainfall monitoring shall be for a minimum duration of one (1) year during which (i) total annual precipitation volume is no less than thirty (30) inches (water equivalent), and (ii) at least two (2) significant rainfall events occur. A significant rainfall event occurs when, excluding any contributions from snow melt, precipitation equals or exceeds one (1) inch of rainfall in a 24-hour period. If during that one (1) year, the total rainfall volume does not equal

or exceed thirty (30) inches *and* two (2) such significant rainfall events do not occur, monitoring shall be extended for (i) an additional nine (9) months, or (ii) until such conditions have been met, whichever occurs first.

57. The Respondents shall utilize the Flow and Rainfall Monitoring Plan to assist with developing their LTCPs and with, among other things:

- a. Determining, in gallons per day per inch mile of sewer (or, if it is not possible to determine the flow in these terms, in gallons per day) the contribution of flow from each sewage collection system to the MSANK STP and/or to any of the CSOs that are components of the combined sewer system operated either by MSANK or the City of Arnold;
- b. Providing sufficient data to enable MSANK and the City of Arnold to characterize the flows for the Hydrologic and Hydraulic Model described in Appendix F and to calibrate and verify any tools or methodology used to characterize system hydraulics. MSANK and the City of Arnold shall ensure that they use a flow monitoring network that provides representative, accurate, and reliable data with sufficient spatial and temporal coverage so that they can develop and validate the Hydrologic and Hydraulic Model as described in Appendix F (Hydrologic and Hydraulic Model);
- c. Validating the model used to determine the frequency and volume of Combined Sewer Overflows and Separate Sanitary Sewer Overflows in accordance Appendix F (Hydrologic and Hydraulic Model) for future

compliance monitoring;

d. Measuring flow rates at those points where wastewater is conveyed from each Municipality into the MSANK sewer collection and treatment system, as and where feasible, as close in proximity as possible to each point of connection. Where it is not feasible to conduct such flow monitoring, or to obtain actual flow monitoring data, other methodologies shall be utilized to characterize flow rates for such points of connection; and

e. Providing accurate and reliable data for developing an LTCP with a range of remedial control measures, including a Feasibility Study with associated alternatives analyses.

58. The flow monitoring program will be conducted through the services of a Professional Engineer who will in turn certify the accuracy of all flow monitoring data. It is left to the discretion of MSANK and each Municipality to determine if one Professional Engineer will be utilized throughout the program or if each Municipality will retain the services of a third party Professional Engineer. Flow monitoring performed by a third party may be acceptable as long as it meets the standards set forth in this Appendix.

59. The Municipalities and MSANK shall record flow monitoring site set up information, including measured sensor offsets, to include; site name, manhole number, pipe size, meter identification number, pre-installation calibration information providing the initial calibration and calibrator's name,

dates of calibration and installation, and an explanation of any variance from the manufacturer's recommended procedures.

60. If any monitoring device is moved, or if there are any other substantive changes to meter installations or adherence to provisions of its Flow and Rainfall Monitoring Plan, MSANK and the City of Arnold shall notify the Municipality of such change within thirty (30) days of such occurrence, and within forty-five (45) days of such occurrence shall submit a proposed amendment to the Flow and Rainfall Monitoring Plan to the Municipality and EPA and PADEP.

61. Monitoring equipment calibration, maintenance, and assurance checks of data quality shall be performed and/or verified such that monitoring accuracy is optimized, and is in conformance with the equipment manufacturers' recommendations and good engineering practices.

APPENDIX E

Combined Sewer Overflow Pollutant Monitoring

62. MSANK and the City of Arnold shall develop plans for determining the concentrations of pollutants in discharges from the combined sewer outfalls ("Combined Sewer Overflow Pollutant Monitoring Plan"), consistent with the requirements of this Appendix E, to enable MSANK and the City of Arnold to develop their LTCPs. The Combined Sewer Overflow Pollutant Monitoring Plan's purpose shall be to assist in characterizing the pollutants discharged from combined sewer overflows to receiving waters. MSANK and the City of Arnold shall utilize the information obtained through implementation of the Combined Sewer Overflow Pollutant Monitoring Plan, along with the Hydrologic and Hydraulic Model and other relevant information, to develop the LTCPs.

63. MSANK and the City of Arnold shall commence implementation of their Combined Sewer Overflow Pollutant Monitoring Plans in accordance with the schedule and requirements set forth therein. That schedule shall require complete implementation of the Plans such that the resulting information can be utilized in the development of the LTCPs.

64. In implementing the Combined Sewer Overflow Pollutant Monitoring Plans, MSANK and the City of Arnold shall utilize the following method for determining the concentrations of Pollutants in Discharges from the

Combined Sewer Outfalls:

a. Collect a series of composite and discrete samples of Combined Sewer Overflows from a representative sample of the Combined Sewer Outfalls (which shall include no less than two (2) of MSANK's Combined Sewer Outfalls and at least one (1) of the City of Arnold's Combined Sewer Outfalls) during each of at least six wet weather events (having an appropriate range of characteristics such as rainfall greater than one quarter of one inch but less than three inches, and duration greater than one hour) while simultaneously measuring the flow of Sewage to determine the volume of Discharge from the diversion chambers to their respective Outfalls. These data shall then be applied to calculate either:

- i. A single, average volume-weighted event mean concentration value for each of the Pollutants identified in Paragraph 67 below ("Average Volume-Weighted Event Mean Concentration" shall mean the mass of pollution per unit volume of flow collected as a composite sample of combined samples of equal volume taken at varying times proportional to the flow rate.) or
- ii. A series (based on total event rainfall or other appropriate factor(s)) of average volume weighted event mean concentration values for each Combined Sewer Overflow Pollutant.

65. The data generated from sampling conducted pursuant to this Appendix

shall reflect changes in pollutant concentrations over time during a range of wet weather events appropriate to the development of the LTCP. All wet weather sampling required by said Appendix shall be carried out in storms of sufficient duration and having sufficient rainfall intensities so as to result in significant discharges from the Combined Sewer Outfall and in significant and representative storm water contributions to Combined Sewer Overflow pollutant loads.

66. Sampling and analyses performed under this Appendix shall be in accordance with the methodologies in 40 C.F.R. Part 136 and EPA's 1999 "Combined Sewer Overflows: Guidance for Monitoring and Modeling," and any amendments thereto.

67. Based on the results of the sampling performed pursuant to Paragraph 63, above, MSANK and the City of Arnold shall determine Combined Sewer Overflow Pollutant concentration values for the following Sewage Parameters or Pollutants for each Combined Sewer Outfall:

- a. Biochemical oxygen demand;
- b. Fecal coliform;
- c. Total suspended solids;
- d. Dissolved oxygen;
- e. Ammonia;
- f. Nitrite plus nitrate; and

g. *E. Coli.*

APPENDIX F

Hydrologic and Hydraulic Model

68. MSANK and the City of Arnold shall submit to the EPA for comment, a plan for the development of a model to simulate the hydrology and hydraulics of flows in the Regional Collection System ("Hydrologic and Hydraulic Model Plan"). The Hydrologic and Hydraulic Model shall be referred to as the "H&H Model."

69. Upon commencement of implementation of the Hydrologic and Hydraulic Model Plan, MSANK and the City of Arnold shall purchase or develop, and implement a current widely used and accepted computerized collection and transmission system modeling program (e.g., "XP-SWMM") to evaluate the impact of existing I/I, and to evaluate I/I rehabilitation projects, proposed system modifications, upgrades, and expansions to the transmission capacity and performance of the sewer collection and treatment systems to create the H&H Model.

70. The H&H Model shall meet the requirements of this Appendix F for the entire sewershed proposed for the H&H Model. The H&H Model and the data collection activities upon which it is based shall be developed and implemented to ensure that the H&H Model integrates the Regional Sewer System. The integrated H&H Model shall allow MSANK and the City of Arnold to assess, as provided herein, the capacity of the Regional Collection System

and the MSANK STP and to identify if measures are necessary for improvements.

71. The H&H Model shall include critical portions of each municipal sewer collection system that is indirectly or directly tributary to the MSANK STP and/or to any of the CSOs that are components of the combined sewer system operated either by MSANK or by the City of Arnold. "Critical Portions of the Municipal Sewer Collection Systems" shall include the following sewer collection system elements:

- i. Are 10 inches in diameter or greater for separate sanitary sewers and 15 inches or greater for combined sewers;
- ii. Are trunk sewer segments which are a final conveyance to the MSANK combined sewer system, the Arnold sewer system, or the MSANK STP;
- iii. Are associated with chronic basement flooding, chronic surcharge areas or chronic maintenance areas, unless, where for combined sewer systems, the surcharge is initiated intentionally as part of the Municipality's or MSANK's NMCs compliance effort;
- iv. Where feasible, are downstream of flow diversion structures (Priority will be given to structures exhibiting dry weather overflows.);
- v. Require additional information suitable for model development purposes; or

vi. Are deemed a priority for inspection by a Professional Engineer.

72. The H&H Model shall be developed so as to

- a. Achieve adequate model performance and accuracy;
- b. Satisfy the requirements of Paragraph 73 of this Appendix F;
- c. Support the development of the LTCP that adequately addresses identified SSOs and CSOs.

73. The H&H Model shall be developed and validated such that it can provide an accurate and reliable characterization of the volume and frequency of discharges from the sewer collection system for use in the development of the LTCP. In its Hydrologic and Hydraulic Model Plan, MSANK and the City of Arnold shall provide information regarding the model they propose to utilize to satisfy the requirements of this Appendix F, including the following information:

- a. The name and type of the Hydrologic and Hydraulic Model;
- b. Computer hardware required to run the Model;
- c. Digital maps and schematics that identify and characterize the portions of the sewer collection system to be included in the proposed model;
- d. Model input parameters, constants, assumed values and expected outputs;
- e. How the H&H Model will be applied to simulate and predict wastewater flows through, and discharges from, the Regional Collection System;

- f. Procedures and protocols for performance of sensitivity analyses (i.e., how the H&H Model responds to changes in input parameters and variables);
- g. Procedures for calibrating the H&H Model to account for values representative of the Regional Collection System using actual system data (e.g., precipitation and flow data);
- h. Procedures for verification of the H&H Model's performance using actual system data (e.g., precipitation and flow data);
- i. Procedures and methodologies for the generation of wet weather hydrographs for each sewershed flow monitoring basin; and
- j. Procedures and methodologies to account for the range of wet weather hydrographs and Sewage Parameters for each Combined Sewer System and Separate Sanitary Sewer System, and for each sewershed in its entirety within the Regional Collection System.

74. In developing the H&H Model in accordance with the Hydrologic and Hydraulic Model Plan, MSANK and the City of Arnold shall utilize, among other information, the information collected pursuant to Appendix D (Flow and Rainfall Monitoring), and shall ensure that the H&H Model is capable of simulating and predicting the following parameters:

- a. The peak flow capacity of all separate sanitary and combined sewer pipes that are within the extent of the H&H Model's pipe network;
- b. The contribution of sanitary wastewater flows in all separate sanitary

and combined sewer pipes that are within the extent of the H&H Model's pipe network;

- c. The average contribution of groundwater to flows in all separate sanitary and combined sewer pipes that are within the extent of the H&H Model's pipe network;
- d. The contribution of Storm Water to flows in all separate sanitary and combined sewer pipes that are within the extent of the H&H Model's pipe network;
- e. The hydraulic grade line profiles of wastewater during both dry weather and wet weather conditions within all separate sanitary and combined sewer pipes that are within the extent of the H&H Model's pipe network;
- f. The peak flow capacity of each Pump Station that is included within the extent of the H&H Model's pipe network;
- g. For both wet weather (at a minimum, including those wet weather events described in Paragraph 75, below) and dry weather conditions, the temporal variation in flow (including the peak flow) for each Pump Station, interceptor, gravity sewer line, and force main within the extent of the H&H Model's pipe network;
- h. The wet weather hydrographs for each Combined Sewer System and Separate Sanitary Sewer System sub-basin, and for each sewershed in its entirety within the Regional Collection System, including baseline wastewater

flow that is routed through gravity sewer lines, Pump Stations, force mains, Regulators, and interceptors;

i. The location, duration, and volume of all SSOs and CSOs within the extent of the H&H Model's pipe network;

j. The annual average percent capture of Combined Sewer System flow generated in the Combined Sewer Systems on both a Combined Sewer System basin and system wide basis;

k. For each of the various remedial control measures considered for the development of the LTCP, the location, duration and volume of all SSOs and CSOs, and

l. Based on the information gathered and developed pursuant to Appendix E (Combined Sewer Overflow Pollutant Monitoring), the estimated Pollutant loads discharged from the Combined Sewer Outfalls.

75. MSANK and the City of Arnold shall also ensure that the Hydrologic and Hydraulic Model is capable of simulating and predicting numerical values for each of the parameters identified above in Paragraph 74 of this Appendix F for both baseline conditions (with the baseline year contemporaneous to the year or years upon which the "typical year" or "average year" is based), and conditions projected twenty (20) years subsequent to completion of construction of the remedial controls, and implementation of the remedial activities, required under the LTCPs. Furthermore, the H&H Model shall be

capable of continuous simulation of these values at each point of Discharge from the Regional Collection System, included in the H&H Model under a range of Wet Weather Flow and Dry Weather Flow conditions. These conditions shall include, at a minimum:

- a. Continuous simulation of a "typical year" and/or "average year," based on the recorded rainfall volume and frequency of storms in the geographic area; and
- b. Continuous simulation of the 10-year return interval, 6-hour duration storm and a two-year return interval, 24-hour duration storm, based on actual monitored temporal rainfall distribution data in the geographic region.

76. In their Hydrologic and Hydraulic Model, MSANK and the City of Arnold shall take into account other relevant variables including, but not limited to: the age and condition of sewer system components; soil type and porosity (where applicable); amount of drainage area; service area size; impervious area; historic rainfall and flow data; historic Inflow and Infiltration data; and current and projected population, river elevation; and seasonal population patterns, if applicable.

77. MSANK and the City of Arnold shall configure the Hydrologic and Hydraulic Model based on representative, accurate, and verified data attributable to the sewer collection system (e.g., pipe sizes and invert elevations, manhole rim elevations).

APPENDIX G

Long Term Control Plan ("LTCP") Development

78. In developing their LTCPs, MSANK and the City of Arnold shall utilize the relevant information they and the Municipalities assisting them obtain pursuant to this AOC or otherwise obtain.

79. The LTCP, at a minimum, shall:

a. Identify all sensitive areas impacted by CSO discharges, describe the impacts to such areas from the CSO discharges, and describe how the LTCP will control CSO discharges to eliminate or minimize impacts of CSOs on sensitive areas. For the purposes of this AOC, sensitive areas shall include: designated Outstanding National Resource Waters; National Marine Sanctuaries; waters with threatened or endangered species and their habitat; waters with primary contact recreation; public drinking water intakes located within one mile of a CSO; and shellfish beds;

b. Include public participation in the development of the LTCP. Specifically, the LTCP shall describe how Respondents have ensured that citizens who use receiving waters and/or are served by the Regional Collection System had the opportunity to participate in the development of the LTCP. This description shall include, but not be limited to, the dates of public meetings and methods of public notification; and

c. Propose a post-NMC/LTCP (post-construction) implementation

monitoring program sufficient to determine whether water quality standards are being attained and designated uses are being achieved. The post-construction compliance monitoring program shall include, but not be limited to, the following components:

- i. monitoring the volume of flow received at the WWTP;
 - ii. monitoring the flow volume and duration of the remaining CSO discharges to characterize pollutant loads to receiving waters;
 - iii. monitoring receiving waters to characterize the impacts of remaining CSO discharges;
 - iv. monitoring the ecological health of the receiving waters;
 - v. monitoring the recreational use of the receiving waters when those waters are impacted by the CSO discharges; and
 - vi. perform other measurements for the purpose of identifying trends in conditions relating to the use of receiving waters and the effects CSO discharges on the health of the population using receiving waters and that of the organisms that reside in the water body.
- d. Include the results of Respondents' characterization of the Regional Collection System, including a CSO System Inventory and Characterization Report and CSO System Hydraulic Characterization. The Respondent's shall incorporate into their aforementioned collection system characterizations a list of identified pollutants, the anticipated pollutant loading, and the impacts

of such pollutant loads on receiving water quality.

80. Based upon the characterization, monitoring, and modeling of the Conveyance and Treatment Systems, consideration of sensitive areas, and available information pertaining to each Municipality's collection system, MSANK and the City of Arnold, with input from each Municipality, shall include the following information at a minimum in the LTCPs:

- a. The estimated annual volume of flow of Sewage (in gallons per year) that is generated in the Regional Collection System in a typical year, and the estimated percentage of this annual volume of flow that is captured for treatment in a typical year as of the effective date of the AOC;
- b. The estimated annual volume of flow of Sewage (in gallons per year) that will be generated in the Regional Collection System in a typical year, and the estimated percentage of this annual volume of flow that will be captured for treatment in a typical year after implementation of the LTCP and after the capture of the SSOs from the Conveyance and Treatment Systems. Such flows shall be simulated for the conditions identified in Paragraph 75 of Appendix F-Hydrologic and Hydraulic Model;
- c. The total service population for the area that is tributary to each point of connection, and forecasts of total flow (in gallons per day and, if available, in gallons-per-day-per-inch-mile of sewer line) from Municipality at each point of connection to the MSANK CSS, the City of Arnold CSS, or the MSANK

STP upon implementation of the LTCP;

d. A determination of flows from both the contributing combined sewer system and/or separate sanitary sewers at each point of connection, a description of how each such determination was made, and a description of how such flows will be managed and/or maintained at each point of connection;

e. The estimated loadings (in lbs./day) of Sewage Parameters, as defined in Appendix E, that will be discharged during a range of storm events from each Combined Sewer Outfall after implementation of the LTCP;

f. Other available information (such as volume measurements and sampling results from Combined Sewer Overflows) that supports the information required under subparagraphs (a) through (e) of this Paragraph;

g. An analysis of alternative remedial controls and alternative remedial activities conducted in accordance with this Appendix (LTCP Development), including an evaluation of such controls and activities to quantify their effectiveness in achieving the requirements and the rationale for the proposed controls to be constructed and activities to be implemented to achieve such compliance requirements;

h. Design criteria and quantifiable performance criteria for the proposed remedial controls and remedial activities;

i. A cost analysis for controlling Combined Sewer Overflows;

- j. An implementation plan and schedule, including interim milestones, for the proposed remedial controls and the proposed remedial activities to ensure that the program of construction (including facilities improvements and expansion) and implementation described in the LTCP is complete at the earliest practicable date.
- k. A post construction compliance monitoring plan to be initiated pursuant to the schedule set forth therein after completion of construction of the remedial controls and implementation of the remedial activities required under the LTCP to determine:
 - i. Whether the proposed remedial controls, as built, and remedial activities, as implemented, meet the design and performance criteria set forth in the LTCPs; and
 - ii. Whether the remedial controls and remedial activities are sufficient to ensure compliance with MSANK's and the City of Arnold's current NPDES permits.

81. In its evaluation of each potential remedial control and activity, MSANK and the City of Arnold shall also take into account the following:

- a. Conditions as they exist at the time of submission, including existing flow volumes generated within the existing Regional Collection System, flows conveyed from the Regional Collection System to the Conveyance and Treatment System as well as any CSOs, SSOs, bypasses from the

Conveyance and Treatment System to receiving waters; and

b. Conditions as they are expected to exist after the implementation, construction and operation of the CSO control technologies identified by MSANK and the City of Arnold pursuant to this Appendix, including those flows from the sources identified in the previous Subparagraph, above. Such flows shall be simulated for the conditions identified in Paragraph 75 of Appendix F-Hydrologic and Hydraulic Model.

82. MSANK and the City of Arnold shall evaluate the effectiveness (in terms of pollutant loading reductions for discharges from the Conveyance and Treatment System) and water quality benefits of constructing and implementing various remedial controls and remedial activities and combinations of such controls and activities. MSANK and the City of Arnold shall first consider the practical and technical feasibility of each remedial control and each remedial activity. They shall then analyze the cost and benefits of each option found to be practically or technically feasible. The remedial controls and remedial activities evaluated shall include, but not are limited to the following:

- a. Upgrade of the existing STP;
- b. Storage of wet weather flows;
- c. Construction of facilities (such as high rate treatment or ballasted flocculation facilities) for providing, at a minimum, primary treatment to

captured combined sewer overflows;

d. Construction of facilities for providing disinfection (and dechlorination if necessary) of Combined Sewer Overflows;

e. Construction of facilities for removing solids and floatables from Combined Sewer Overflows;

f. Construction of relief sewers;

g. Relocation of Combined Sewer Outfalls;

h. Implementation of pretreatment measures to reduce flows and/or pollutants discharged into the Regional Collection System from industrial users; and

i. Construction and/or implementation of a combination of the above remedial control measures.

83. Based on the evaluations required by this Appendix, MSANK and the City of Arnold shall identify which remedial controls and remedial activities they propose to construct and implement, and shall detail the design criteria and quantifiable performance criteria for those controls and activities. These design criteria and performance measures shall include, but not be limited to:

a. Pumping capacities of pump stations;

b. Design capacity of storage facilities;

c. Percentage removal of specified pollutants by treatment facilities; and

d. Concentration and/or mass loadings for specified pollutants.

84. As part of its remedial controls and remedial activities, MSANK and the City of Arnold, with input from the Municipalities shall include a program for managing contributions from each Municipality so that such contributions to the Conveyance and Treatment Systems do not either result in exceedences of system capacity or preclude attainment of all applicable Water Quality Standards.

85. MSANK and the City of Arnold shall describe in their LTCPs a phased program for constructing the remedial controls and for implementing the proposed remedial activities, including, at a minimum, a schedule and budget for the following phases of construction and implementation for the Conveyance and Treatment System:

- a. Preliminary design;
- b. Final design;
- c. Bidding and bid review, if any;
- d. Initiation of construction and/or implementation;
- e. Initiation of operation for constructing remedial controls; and
- f. Performance testing.

86. The LTCPs shall describe in sufficient detail how MSANK, the City of Arnold, and the Municipalities will satisfy the Presumption Approach post-NMCs/LTCP implementation. In order to determine whether or not water quality standards are being attained and designated uses are being

achieved, MSANK and the City of Arnold and the Municipalities must provide sufficient information about post-NMCs/LTCP implementation for PADEP, as authorized in Section 402(b) of the CWA, to evaluate and determine "whether such presumption is reasonable in light of the data and analysis conducted in the characterization, monitoring, and modeling of the system and the consideration of sensitive areas," (CSO Control Policy, 59 Fed. Reg. at 18692). The description in the LTCP shall include, but not limited to, the following:

- a. The method by which the Respondents will calculate 85% capture and treatment (i.e., 100% of sanitary flow was captured and 85% of the combined flow was captured and treated based upon flow monitoring, etc.);
- b. End-of-pipe measurements to be used to identify trends in the frequency of and/or pollutant loadings to receiving waters from CSO discharges;
- c. In-stream measurements to be used to identify trends in the water quality impacted by CSO discharges;
- d. Other measurements to be used to indicate trends in conditions relating to the use of receiving waters and the effects of CSO discharges on the health of the population using receiving waters and that of the organisms that reside in the water body; and
- e. A description of how the data described in this paragraph and other

information, as appropriate, will be used for the characterization.

87. After completing construction of the remedial controls and implementation of the remedial activities pursuant to the LTCP, MSANK and the City of Arnold shall, for a period not to exceed five (5) years, annually submit to the EPA and the Department for comment proposed Best Management Practices for the operation and maintenance of each remedial control and each remedial activity implemented for the first time in the year in question. Each Municipality and MSANK shall incorporate Best Management Practices into its operation and maintenance manuals after receiving any comments from PADEP.

APPENDIX H

Nine Minimum Controls

88. The NMCs are controls that can reduce CSOs and their effects on receiving water quality. As set out in the CSO Policy, the NMCs are as follows:

- a. Proper operation and regular maintenance programs for the sewer system and the CSOs;
- b. Maximum use of the collection system for storage;
- c. Review and modification of pretreatment requirements to assure CSO impacts are minimized;
- d. Maximization of flow to the publicly owned treatment works for treatment;
- e. Prohibition of CSOs during dry weather;
- f. Control of solid and floatable materials in CSOs;
- g. Pollution prevention;
- h. Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts; and
- i. Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.

89. The NMCs should be implemented in accordance with EPA's NMCs guidance document: *Combined Sewer Overflows: Guidance for Nine Minimum*

Controls, Publication No. EPA 832-9-95-003, May 1995.

CERTIFICATE OF SERVICE

I hereby certify that on the date noted below I filed with the Regional Hearing Clerk, EPA Region III, the Administrative Order for Compliance on Consent for the following matter: Municipal Sanitary Authority of the City of New Kensington *et al.*, Docket Nos. CWA-03-2009-0230, CWA-03-2009-0231, CWA-03-2009-0232, CWA-03-2009-0233, CWA-03-2009-0234, and CWA-03-2009-0235. In addition, I served a true and correct copy of this document as follows:

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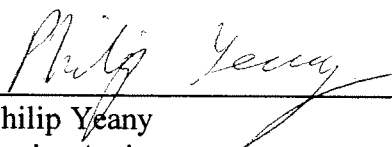
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