notice orally or by electronic or facsimile transmission to EPA and TCEQ, within five (5) business days of when SAWS first knew that the event might cause a delay. Within fourteen (14) days thereafter, SAWS shall provide in writing to EPA and TCEQ an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; SAWS rationale for attributing such delay to a Force Majeure event if it intends to assert such a claim; and a statement as to whether, in the opinion of SAWS, such event may cause or contribute to an endangerment to public health, welfare or the environment. SAWS shall include with any notice all available documentation supporting the claim that the delay was attributable to a Force Majeure event, and may supplement this documentation as additional information becomes available. Failure to comply with the above requirements shall preclude SAWS 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. SAWS shall be deemed to know of any circumstance of which SAWS, any entity controlled by SAWS, or SAWS contractors knew or should have known.

82. If EPA, after a reasonable opportunity for review and comment by TCEQ, agrees that the delay or anticipated delay is attributable to a Force Majeure event, the time for performance of the obligations under this Consent Decree that are affected by the Force Majeure event will be extended by EPA, after a reasonable opportunity for review and comment by TCEQ, for such time as is necessary to complete those obligations. An extension of the 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. EPA will notify SAWS in writing of the length of the

extension, if any, for performance of the obligations affected by the Force Majeure event.

83. If EPA, after a reasonable opportunity for review and comment by TCEQ, does not agree that the delay or anticipated delay has been or will be caused by a Force Majeure event, EPA will notify SAWS in writing of its decision.

84. If SAWS elects to invoke the dispute resolution procedures set forth in Section XI (Dispute Resolution), it shall do so no later than fifteen (15) Days after receipt of EPA's notice. In any such proceeding, SAWS shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a Force Majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that SAWS complied with the requirements of Paragraphs 80 and 81 above. If SAWS carries this burden, the delay at issue shall be deemed not to be a violation by SAWS of the affected obligation of this Consent Decree identified to EPA and the Court.

XI. DISPUTE RESOLUTION

85. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree. SAWS failure to seek resolution of a dispute under this Section shall preclude SAWS from raising any such issue as a defense to an action by the United States or the State to enforce any obligation of SAWS arising under this Consent Decree.

86. Informal Dispute Resolution. Any dispute subject to Dispute Resolution under this Consent Decree shall first be the subject of informal negotiations. The dispute shall be considered to have arisen when SAWS sends the United States and the State a written Notice of Dispute. Such Notice of Dispute shall state clearly the matter in dispute. The period of informal

negotiations shall not exceed twenty (20) Days from the date the dispute arises, unless that period is modified by written agreement between the United States and SAWS. The United States shall consult with the State during the period of informal negotiations. If the United States and SAWS cannot resolve a dispute by informal negotiations, then the position advanced by the United States shall be considered binding unless, within forty-five (45) Days after the conclusion of the informal negotiation period, SAWS invokes formal dispute resolution procedures as set forth below.

87. Formal Dispute Resolution. SAWS shall invoke formal dispute resolution procedures, within the time period provided in the preceding Paragraph, by serving on the United States and the State a written Statement of Position regarding the matter in dispute. The Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting SAWS position and any supporting documentation relied upon by SAWS. The United States shall serve its Statement of Position within sixty (60) Days of receipt of SAWS Statement of Position. The United States' Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting that position and any supporting documentation relied upon by the United States. The United States shall consult with the State during preparation of its Statement of Position. The United States' Statement of Position shall be binding, unless SAWS files a motion for judicial review of the dispute in accordance with the following Paragraph.

88. Judicial Dispute Resolution. SAWS may seek judicial review of the dispute by filing with the Court and serving on the United States and the State, in accordance with Section XV (Notices) of this Consent Decree, a motion requesting judicial resolution of the dispute. The motion must be filed within twenty (20) Days of receipt of the United States' Statement of

Position pursuant to the preceding Paragraph. The motion shall contain a written statement of SAWS position on the matter in dispute, including any supporting factual data, analysis, opinion, or documentation, and shall set forth the relief requested and any schedule within which the dispute must be resolved for orderly implementation of the Consent Decree. The United States shall respond to SAWS motion within the time period allowed by the Local Rules of this Court. The United States shall consult with the State during preparation of its response. SAWS may file a reply memorandum, to the extent permitted by the Local Rules.

89. Standard of Review. Except as otherwise provided in this Consent Decree, in any dispute brought under this Section, SAWS shall bear the burden of demonstrating that its position complies with this Decree. The Parties' positions are reviewable only on the administrative record. The Parties reserve the right to argue regarding the applicable standard of review in any judicial proceeding.

90. The invocation of dispute resolution procedures under this Section shall not, by itself, extend, postpone or affect in any way any obligation of SAWS under this Consent Decree, unless and until final resolution of the dispute so provides. Stipulated Penalties with respect to the disputed matter shall continue to accrue from the first day of noncompliance, but payment shall be stayed pending resolution of the dispute as provided in Paragraphs 74 and 75. If SAWS does not prevail on the disputed issue, Stipulated Penalties shall be assessed and paid as provided in Section IX (Stipulated Penalties). The Dispute Resolution procedures described in Paragraphs 85, 86, 87, 88 and 89 shall also apply for any dispute solely between the State and SAWS.

XII. RIGHT OF ENTRY AND INFORMATION COLLECTION AND RETENTION

91. The EPA and its representatives and TCEQ and its representatives, including attorneys,

contractors, and consultants, shall each have the right of entry into the premises of any SAWS property at all reasonable times, upon presentation of credentials, to:

a. monitor the progress of activities required under this Consent Decree;

b. verify any data or information submitted to the United States or the State;

c. obtain samples and, upon request, splits of any samples taken by SAWS or its representatives, contractors or consultants;

d. observe performance tests;

e. obtain documentary evidence, including photographs and similar data; and

f. assess SAWS compliance with this Consent Decree, its TPDES Permits, the CWA or applicable State law.

92. Until five (5) years after the date of submission of a Deliverable to EPA, SAWS shall retain, and shall instruct its contractors and agents to preserve, all non-identical copies of all documents, reports, data, records or other information (including documents, records, or other information in electronic form) in its or its contractors' or agents' possession or control, or that come into its or its contractors' or agents' possession or control, and that relate in any manner to the SAWS performance of its obligations under this Consent Decree, including any underlying research and analytical data. This information retention requirement shall apply regardless of any contrary SAWS corporate or institutional policies or procedures. At any time during this information retention period, upon request by the United States, SAWS shall provide copies of any documents, reports, analytical data or other information required to be maintained under this Paragraph.

93. At the conclusion of the information retention period provided in the preceding Paragraph, SAWS shall notify the United States at least ninety (90) Days prior to the destruction

of any documents, records or other information subject to the requirements of the preceding Paragraph and, upon request by the United States, SAWS shall deliver copies of any such documents, records, or other information to the EPA.

94. This Consent Decree in no way limits or affects the EPA's or the State's right to enter or access the property of SAWS, to obtain information, to conduct inspections, to require monitoring, and to obtain information from SAWS, as authorized by law, nor does it limit or affect any duty or obligation of SAWS to maintain documents, records or other information imposed by applicable law.

XIII. EFFECT OF SETTLEMENT/RESERVATION OF RIGHTS

95. This Consent Decree resolves the claims for injunctive relief and Civil Penalties for the violations alleged in the Complaint through the Date of Lodging.

96. The United States and the State reserve all rights against SAWS with respect to any violations by SAWS that occur after the Date of Lodging, and/or for any violations of the CWA not specifically alleged in the Complaint, whether they occurred before or after the Date of Lodging.

97. The United States and the State further reserve all legal and equitable remedies available to enforce the provisions of this Consent Decree, except as expressly stated herein. This Consent Decree shall not be construed to limit the rights of the United States or the State to obtain penalties or injunctive relief under the CWA or applicable state law or implementing regulations, or under other federal or state laws, regulations, or permit conditions, except as expressly specified in this Consent Decree. The United States reserves all rights against SAWS with respect to criminal liability. The United States further reserves all legal and equitable remedies

to address any imminent and substantial endangerment to the public health or welfare or the environment arising at, or posed by, SAWS publicly owned treatment works, whether related to the violations addressed in this Consent Decree or otherwise.

98. In any subsequent administrative or judicial proceeding initiated by the United States or the State for injunctive relief, Civil Penalties, or other appropriate relief relating to SAWS publicly owned treatment works or violations under the Complaint, SAWS shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, *res judicata*, collateral estoppel, issue preclusion, claim preclusion, claim-splitting or other defenses based upon any contention that the claims raised by the United States or the State in the subsequent proceeding were or should have been brought in the instant case, except with respect to claims that have been specifically resolved pursuant to Paragraph 95.

99. This Consent Decree is not and shall not be construed as a permit or a modification of any permit, under any federal, State or local laws or regulations. SAWS is responsible for achieving and maintaining complete compliance with all applicable federal, State, and local laws, regulations and permits; and SAWS compliance with this Consent Decree shall be no defense to any action commenced by the United States or the State pursuant to any such laws, regulations, or permits. The United States does not, by its consent to the Lodging of this Consent Decree, warrant or aver in any manner that SAWS compliance with any aspect of this Consent Decree shall result in compliance with provisions of the CWA or with any other provisions of federal, State or local laws, regulations, or permits. Notwithstanding EPA's review or approval of any plans, reports, policies or procedures developed pursuant to or as a result of this Consent Decree, SAWS shall remain solely responsible for any non-compliance with the terms of this Consent Decree, all applicable permits, as well as all federal and State laws and regulations

promulgated under those laws.

100. SAWS duty to comply with the terms of this Consent Decree is not conditioned on the receipt of any federal or State funds or SAWS financial capabilities. Failure to comply is not excused by lack of federal or State grant funds, or by the processing of any applications for the same, or by SAWS financial capabilities.

101. This Consent Decree does not limit or affect the rights of the Parties against any third parties not party to this Consent Decree, nor does it limit the rights of third parties not party to this Consent Decree, against SAWS, except as otherwise provided by law. This Consent Decree shall not be construed to create rights in, or grant any cause of action to, any third party not party to this Consent Decree.

102. Nothing in this Consent Decree limits the rights or defenses available under Section 309(e) of the Clean Water Act, 33 U.S.C. §1319(e), in the event that the laws of the State, as currently or hereafter enacted, may prevent SAWS from raising the revenue needed to comply with this Decree.

103. Nothing in this Consent Decree limits any rights the United States or the State may have against the City of San Antonio for violations of Texas Government Code Title 9, Subtitle J, Section 1502.057 or City Code of Ordinances, Article V, §§ 34-442, 34-446, 34-447, 34-448, 34-449, and 34-450 or to seek relief from the City of San Antonio in the event that SAWS fails to comply with its obligations under this Consent Decree.

XIV. COSTS

104. The United States, the State and SAWS each shall bear its own costs of this action, including attorneys' fees, except that the United States and the State shall be entitled to collect the costs (including attorneys' fees) incurred in any action necessary to collect any portion of the

Civil Penalty or any Stipulated Penalties due but not paid by SAWS.

XV. NOTICES

105. Unless otherwise specified, all reports, notices or any other written communications required to be submitted under this Consent Decree shall be sent to the respective Parties at the following addresses:

As to the United States:

U.S. Department of Justice
Environmental Enforcement Section
Environment and Natural Resources Division
P.O. Box 7611
Washington, D.C. 20044-7611
Reference: DOJ Case No. [90-5-1-1-09215]

U.S. Environmental Protection Agency, Region VI
Chief, Water Enforcement Branch (6EN-W)
Compliance Assurance and Enforcement Division
1445 Ross Avenue
Dallas, Texas 75202-2733

As to the State of Texas or TCEQ:
Mark Walters
Office of the Attorney General
State of Texas
Environmental Protection Division
P.O. Box 12548
Austin, TX 78711-2548

Reference: AG # 082508284

Order Compliance Team
Enforcement Division, MC 224
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 7811-3087

Water Section Manager
San Antonio Regional Office
Texas Commission on Environmental Quality
14250 Judson Road
San Antonio, TX 77233-4480

As to SAWS:
President and CEO
San Antonio Water System
2800 U.S. Highway 281 North
San Antonio, TX78212

General Counsel
San Antonio Water System
2800 U.S. Highway 281 North
San Antonio, TX 78212

106. Notices submitted in accordance with this Section shall be deemed submitted on the date they are postmarked and sent by certified mail, return receipt requested or, when sent by non-postal delivery, the date of pickup provided same is for next day delivery, or, if sent electronically, they shall be deemed submitted upon transmission, but a notice is not effective if the sending Party learns that it did not reach the Party to be notified. Notwithstanding the sender's receipt of a successful delivery notification, a recipient that fails to receive the submission may request delivery by other means. Such a request does not affect the timeliness of the original submission.

107. Any Party may, by written notice to the other Parties, change its designated notice recipient(s) or notice address(es) provided above. Any Party may designate electronic mail address(es) as an alternative means for receiving submittals provided for by Paragraph 105. If a Party has designated an electronic mail address for receipt of submittals, delivery to the designated address shall substitute for the means of transmitting submissions provided for by Paragraph 105; provided, however, if an electronic mail submission is not successfully delivered to a designated electronic mail address, the Party making the submission shall make the submission as provided for by Paragraph 105 unless an alternative means of transmission is agreed upon.

XVI. EFFECTIVE DATE

108. The Effective Date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court.

XVII. RETENTION OF JURISDICTION

109. The Court shall retain jurisdiction over this case until termination of this Consent Decree for the purpose of resolving disputes arising under this Consent Decree pursuant to Section XI (Dispute Resolution), entering orders modifying this Consent Decree pursuant to Section XVIII (Modification), or effectuating or enforcing compliance with the terms of this Consent Decree.

XVIII. MODIFICATION

110. The terms of this Consent Decree, including any attached appendices, may be modified only by a subsequent written agreement signed by all the Parties. When the modification constitutes a material change to this Decree, it shall be effective only upon approval by the Court. The Parties may by mutual agreement determine whether a modification is non-material. Non-material changes to this Consent Decree (including Appendices) shall be made by written agreement of the Parties without Court approval, except as described in Paragraph 111 below. Examples of non-material changes that require written agreement of the Parties include:

a. Changes in planned Remedial Measures, which reduce overall Work scope or extend completion dates beyond the calendar year in which the Measures were originally scheduled for completion in the Early Action Program, Capacity Remedial Measures Plan or Condition Remedial Measures Plan, so long as those changes do not adversely affect conformance with Consent Decree performance

objectives or final completion deadlines;

b. Changes to Appendices, guidelines or processes based upon implementation experience so long as the overall technical and schedule objectives are achieved; and

c. Changes in sewer system investigation and/or remediation techniques as a result of technology advancements or implementation experience, so long as the specific requirements for Condition Assessment CCTV and Pole Camera Work are met.

111. SAWS may make changes to Remedial Measures techniques as reported in the EPA approved Remedial Measures Plans (i.e., replace, rehabilitate and repair) that are made for technical reasons, so long as those changes do not adversely affect conformance with Consent Decree performance objectives or final completion deadlines. SAWS shall report in the Annual Report these variations from the EPA approved Remedial Measures Plan.

112. Any disputes, with the exception of disputes regarding the materiality of a modification, between the United States, the State, and SAWS concerning modification of this Consent Decree shall be resolved pursuant to Section XI (Dispute Resolution) of this Consent Decree, provided, however, that, instead of the burden of proof provided by Paragraph 89, the Party seeking the modification bears the burden of demonstrating that it is entitled to the requested modification in accordance with Federal Rule of Civil Procedure 60(b).

113. Following the filing of any motion under Rule 60(b) seeking a material change to this Consent Decree, Stipulated Penalties shall accrue due to SAWS failure, if any, to continue performance of obligations under the Consent Decree that are necessarily the subject of the Rule 60(b) motion; provided, however, that such penalties need not be paid if the Court resolves the motion in SAWS favor. SAWS shall comply with the Consent Decree as modified.

XIX. CERTIFICATION

114. Certification. In all Deliverables, notices, documents or reports submitted to the United States and State pursuant to this Consent Decree, SAWS shall, by a SAWS senior management official, sign and certify such notices, documents and reports as follows:

> *I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering such information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*

The certification requirement does not apply to emergency or similar notifications where compliance would be impractical.

115. SAWS shall not object to the admissibility into evidence of any report, plan, notice or any other document prepared in accordance with this Consent Decree or the information contained in said reports in any proceeding to enforce this Consent Decree.

XX. TERMINATION

116. SAWS may serve upon the United States and the State a Request for Termination, certifying that SAWS has completed performance of its compliance (Section V) required by this Decree, together with all necessary supporting documentation. This Consent Decree may be terminated when the United States in consultation with the State determines SAWS has completed performance of its compliance (Section V) required by this Decree, provided that

SAWS has fulfilled all other obligations of this Decree, including payment of the Civil Penalty under Section VIII of this Decree and any accrued Stipulated Penalties as required by Section IX of this Decree not waived or reduced by the United States.

117. Following receipt by the United States and the State of SAWS Request for Termination, the United States, the State and SAWS shall confer informally concerning the Request and any disagreement that they may have as to whether SAWS has complied with the requirements for termination of this Consent Decree. If the United States, after consultation with the State, agrees that the Decree may be terminated, the United States and SAWS shall submit, for the Court's approval, a joint stipulation terminating the Decree.

118. If the United States, after consultation with the State, does not agree that the Decree may be terminated, SAWS may invoke Dispute Resolution under Section XI of this Decree. However, SAWS shall not seek Dispute Resolution of any dispute regarding termination, under Paragraph 87 of Section XI, until one hundred-twenty (120) Days after service of its Request for Termination.

XXI. PUBLIC PARTICIPATION

119. This Consent Decree shall be lodged with the Court for a period of not less than thirty (30) Days for public notice and comment in accordance with 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations indicating that the Consent Decree is inappropriate, improper or inadequate. SAWS consents to Lodging of this Consent Decree without further notice.

XXII. SIGNATORIES/SERVICE

120. Each undersigned representative of SAWS, EPA, the Assistant Attorney General for the

Environment and Natural Resources Division of the Department of Justice, on behalf of the United States, and TCEQ and the State certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree, to execute this document, and to legally bind the Party he or she represents to this document.

121. This Consent Decree may be signed in counterparts, and its validity shall not be challenged on that basis.

122. SAWS agrees not to oppose Lodging of this Consent Decree by the Court or to challenge any provision of the Decree, unless the United States has notified SAWS in writing that it no longer supports Lodging of the Decree.

123. SAWS agrees to accept service of process by mail or courier service to the address set forth in Section XV (Notices) with respect to all matters arising under or relating to this Consent Decree and to waive the formal service requirements set forth in Rules 4 and 5 of the Federal Rules of Civil Procedure and any applicable Local Rules of this Court including, but not limited to, service of a summons.

XXIII. INTEGRATION/APPENDICES

124. This Consent Decree and its Appendices constitute the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in the Decree and supersede all prior agreements and understandings, whether oral or written, concerning the settlement embodied herein. Other than the Appendices, which are attached hereto and explicitly incorporated into this Decree, and Deliverables that are subsequently submitted and approved pursuant to this Decree, no other document, nor any representation, inducement, agreement, understanding, or promise, constitutes any part of this Decree or the settlement it represents, nor shall it be used in construing the terms of this Decree. The

Appendices for this Consent Decree are as follows:

Appendix A	Training Program in CMOM
Appendix B	Cleaning Program
Appendix C	Condition Program
Appendix D	Capacity Program
Appendix E	Lift Station Rehabilitation and Elimination Program
Appendix F	Early Action Program
Appendix G	Report Templates
Appendix H	WWTP Effluent Violations Summary.

XXIV. FINAL JUDGMENT

125. Upon Lodging and approval of this Decree by the Court, this Decree shall constitute a final judgment of the Court as to the United States, the State, and SAWS.

SO ORDERED THIS 15 DAY OF October, 2013.

United States District Judge

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States and State of Texas v. San Antonio Water System.

FOR PLAINTIFF UNITED STATES OF AMERICA:

Date: 7/18/13

ROBERT G. DREHER
Acting Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

Date: 7/18/13

NATHANIEL DOUGLAS
Deputy Chief
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611

ROBERT PITMAN
UNITED STATES ATTORNEY
WESTERN DISTRICT OF TEXAS

JOHN PANISZCZYN
Assistant United States Attorney
Western District of Texas
601 N.W. Loop 410
Suite 600
San Antonio, Texas 78216

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States and State of Texas v. San Antonio Water System.

FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY:

Date: 6/26/13

CYNTHIA GILES, Assistant Administrator
Office of Enforcement and Compliance Assurance
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

Date: 6/21/13

SUSAN SHINKMAN, Director
Office of Civil Enforcement
Office of Enforcement and Compliance Assurance
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

Date: 6/20/13

MARK POLLINS, Director
Water Enforcement Division
Office of Civil Enforcement
Office of Enforcement and Compliance Assurance
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

Date: 6/19/13

JOANNA CITRON DAY, Attorney
Water Enforcement Division
Office of Civil Enforcement
Office of Enforcement and Compliance Assurance
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States and State of Texas v. San Antonio Water System.

FOR UNITED STATES ENVIRONMENTAL PROTECTION AGENCY:

Date: 6·4·13

JOHN BLEVINS
Division Director
Compliance Assurance and Enforcement Division
U.S. EPA, Region 6
1445 Ross Ave., Suite 1200 (6EN-W)
Dallas, TX 75202
Phone: (214) 665-2266

Date: 6/4/13

EFREN ORDONEZ
Office of Regional Counsel
U.S. EPA, Region 6
1445 Ross Ave., Suite 1200 (6RC-EW)
Dallas, TX 75202
Phone: (214) 665 2181

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States and State of Texas v. San Antonio Water System.

FOR PLAINTIFF STATE OF TEXAS:

Date: 7-3-2013

MARK L. WALTERS
Assistant Attorney General
Office of the Attorney General
P.O. Box 12548
Austin, TX 78711-2548
Phone: (512) 463-2012

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States and State of Texas v. San Antonio Water System.

FOR DEFENDANT SAN ANTONIO WATER SYSTEM:

Date: 6-5-13

ROBERT R. PUENTE
President and Chief Executive Officer
San Antonio Water System
2800 U.S. Highway 281 North
San Antonio, TX 78212

APPENDIX A

APPENDIX A

TRAINING PROGRAM IN CMOM

SAWS Employee Training Categories

Following is a summary of the different types of employees and wastewater collection system crews that SAWS utilizes to perform operation and maintenance activities related to SSO reduction and mitigation in the SAWS wastewater collection system. Following each employee or crew type is a summary of the typical technical and skills training topics that SAWS may typically offer to each employee or crew type. The specific training received by each employee or crew will depend on the actual types of work assigned to each employee or crew.

1. Typical training topics that may be offered to specific types of wastewater collection system operations and maintenance employees or crews:
    a. Sewer Cleaning Crews:
        i. sewer cleaning
        ii. mechanical proofing
        iii. collection of manhole inspection data
        iv. collection of sewer visual inspection data
    b. Sanitary sewer overflow (SSO) response Crews:
        i. sewer cleaning (for blockage removal)
        ii. SSO containment
        iii. SSO clean-up
    c. Sewer construction and/or repair crews:
        i. sewer repair methods
        ii. sewer pipe patching
    d. Sewer and manhole inspection crews:
        i. NASSCO PACP defect code training (or other sewer defect coding system training) for sewer CCTV camera operators
        ii. collection of manhole inspection data
        iii. collection of visual sewer inspection data
    e. FOG Inspectors
        i. grease removal equipment inspection procedures
        ii. inspection data collection
    f. Lift station operations and maintenance crews
        i. lift station equipment maintenance
    g. Lift station emergency response crews
        i. lift station alarm response procedures
        ii. SSO containment
        iii. SSO clean-up
    h. Crew supervisors
        i. when appropriate, attend training attended by crews they supervise
    i. Crews or employees responsible for SSO documentation and reporting:
        i. data collection for SSO events
        ii. SSO volume estimation

APPENDIX B

Appendix B
SAWS System-Wide Cleaning Program Process and Guidelines

Small Diameter (SD) Pipes – Less than 24-inch Diameter

Plan, Schedule, and Conduct System Wide SD Cleaning and Visual Inspection Program

Implement SD Gravity Sewer Main Cleaning and Visual Inspection Activities

- Clean all SD pipes on a 10 year cycle. Clean a minimum of 12% of the total SD pipe mileage annually. Repeat SD pipe cleaning mileage is counted towards the 12% annual minimum.

Assess Visual Inspection Data

- Evaluate whether pipe should be referred for a more detailed inspection

Implement Repeat ("Hot Spot") Gravity Sewer Cleaning and Visual Inspection Activities

- Pipes will be selected for repeat cleaning and cleaning frequencies will be determined as warranted based on:
  - SAWS best professional judgment
  - Utilizing SSO information
  - CCTV findings
  - Previous sewer cleaning findings.

Refer for CCTV inspection if warranted

- Guidelines for referral include:
  - Cleaning Tools will not pass through pipe
  - Pieces of broken pipe or significant quantities of fresh soil observed at downstream manhole

Evaluate Cleaning Findings

Guidelines for evaluation of gravity sewer cleaning findings

Pipes Included in "Hot Spot" Program:	Pipes Not in the "Hot Spot" Program:
- Clear – Reduce Frequency - Light – Keep at current frequency - Medium/Heavy – Increase Frequency	- Medium/Heavy – Add Pipe to the Hot Spot Program

Note: These are computer generated recommendations based on business logic that a human reviews to accept/ reject/revise.

Review and Implement Cleaning Frequency Changes

- Human will review computer generated recommendations:
  - Accept recommendation
  - Reject recommendation
  - Revise recommendation
- Update the Preventive Maintenance Cleaning module in CMMS with Accepted changes

Appendix B
SAWS System-Wide Cleaning Program Process and Guidelines

Large Diameter (LD) Pipes – Greater than or Equal to 24-inch Diameter

Plan, Schedule, and Conduct LD Inspection Activities

- Inspect all LD pipes per requirements listed in Paragraph 14.c of the Consent Decree

↓

Evaluate LD Pipe Inspection Data

Inspection Data Evaluation Guidelines to Determine Cleaning Needs

- SAWS inspection results must indicate that the average depth of debris exceeds twenty percent of that pipe's diameter. In addition, for any such pipe, SAWS will use its professional judgment to decide whether to clean the pipe if the model indicates that the pipe is able to convey peak flows with the observed debris.

↓

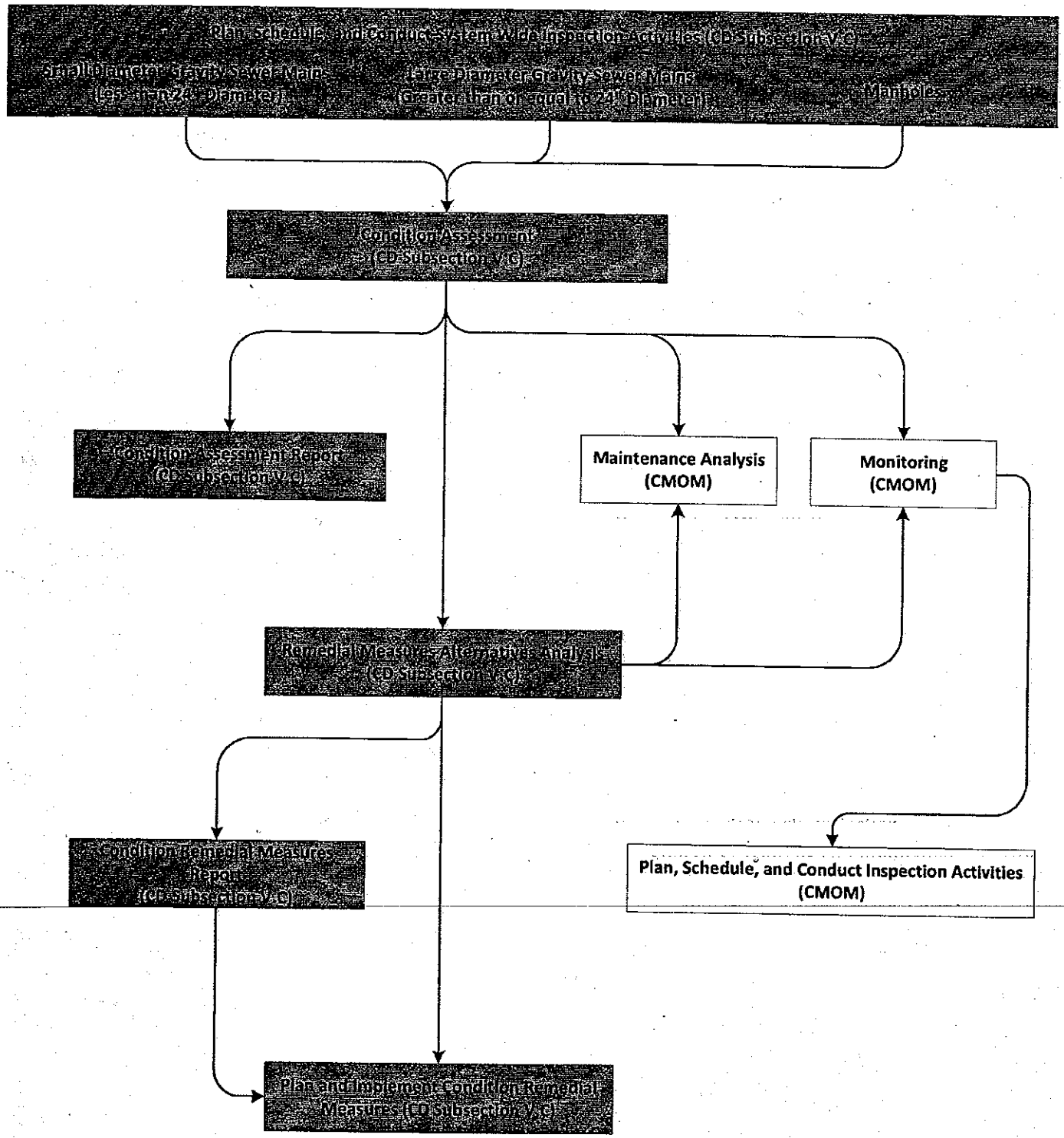
Implement LD Cleaning Activities

- Schedule and Implement LD Cleaning.

APPENDIX C

Appendix C

SAWS Condition Assessment and Remediation Program Process and Guidelines Overview



Appendix C

SAWS Condition Assessment and Remediation Program Process and Guidelines

Plan, Schedule, and Conduct System Wide Inspection Activities (CD Subsection V.C)

Small Diameter Gravity Sewer Mains (Less than 24" Diameter)

- Select inspection methods
  - CCTV (clay pipe installed prior to 1973, concrete pipe, and EARZ pipe)
  - Pole camera (Clay pipe installed from 1973 through 1982)
  - Visual inspection methods may include:
    - Smoke testing
    - Mechanical proofing
    - Sewer cleaning findings, or
    - pye testing
  - Other techniques (such as new technologies or methods that become available)
- Prioritize pipes for inspection
  - Generally prioritize pipe selected for CCTV and pole camera by age, materials, analysis of past SSO frequency and volumes, proximity of sewer pipes to surface waters, and other appropriate factors
  - Group pipes for EARZ inspections
  - Additional inspections as needed for investigations
- Schedule and conduct inspection activities
  - Generally, schedule visual inspection in conjunction with small diameter gravity sewer main cleaning

Large Diameter Gravity Sewer Mains (Greater than or equal to 24" Diameter)

- Inspection Methods
  - CCTV-Sonar, 360-degree video, Laser imaging, Physical entry
  - Other methods normally utilized by other sewer management agencies
  - Other techniques (such as new technologies or methods that become available)
- Select and prioritize pipes for inspection
  - Generally prioritize pipe by age, materials, analysis of past SSO frequency and volumes, proximity of sewer pipes to surface waters and other appropriate factors
  - Group pipes for EARZ inspections
  - Additional inspections as needed for investigations
- Schedule and conduct inspection activities

Manholes

- Inspection Methods
  - Visual
  - Other techniques (such as new technologies or methods that become available)
- Schedule and conduct inspection activities
  - Generally schedule inspection in conjunction with small and large diameter gravity sewer main inspections

Condition Assessment (CD Subsection V.C)

- Perform condition assessment based on these guidelines
  - Prioritize the review of inspection data based on the severity of findings. Prioritize review of small diameter gravity sewer pipes
    - Using PACP Quick Ratings, in general review pipes with grade 5 and 4 defects first, followed by pipes with grade 3, 2, and 1 defects
  - Categorize assets based on the following table

Category	Example Structural Conditions SAWS Anticipates for Each Category	Likely Outcome
E - Very Poor Condition	Structural collapse which has or could likely cause SSO or collapse imminent	Alternatives Analysis
D - Poor Condition	Significant missing material or broken material, severe corrosion with exposed pipe wall reinforcement or pipe wall deformation greater than 25% from structural deterioration combined with hinge fractures.	Alternatives Analysis or Monitoring
C - Fair Condition	Pipe wall deformation less than 25% from structural deterioration combined with hinge cracks, displaced fractures, or moderate corrosion but no pipe wall reinforcement visible	Monitoring or Maintenance Analysis
B - Good Condition	Pipe wall deformation from construction impacts or less than 10% of diameter from structural deterioration, minor corrosion, slightly open non-displaced fractures, or other moderate material degradation	Maintenance Analysis
A - Very Good Condition	Mild defects which may include tight non-displaced cracks or other mild material degradation	Maintenance Analysis

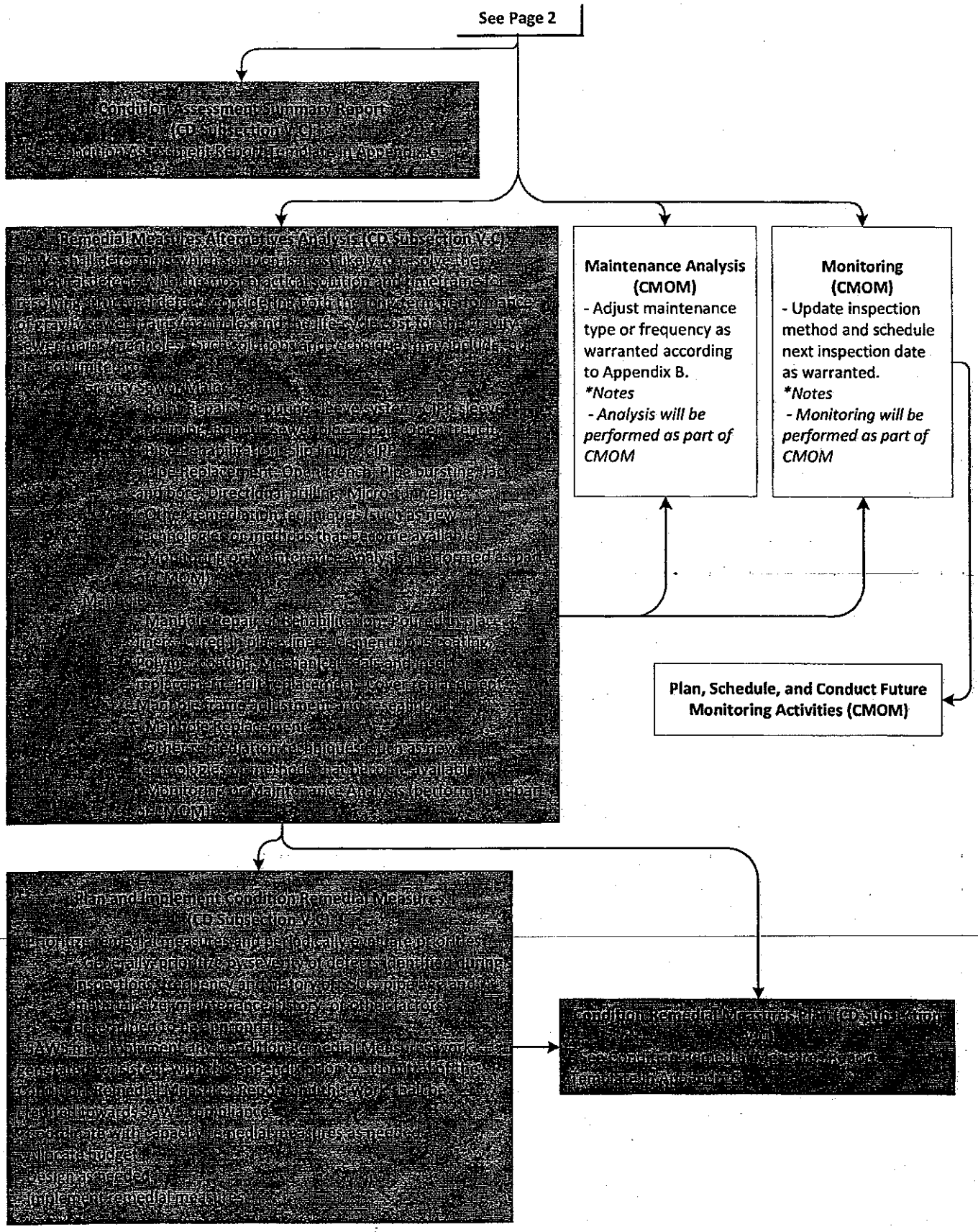
- Perform condition assessment on inspection data and consider appropriate criteria which shall include factors such as the following:
  - Type and severity of structural defects
  - Historical operation and maintenance data, overflows, inspections, cleaning findings, cleaning frequency, previous remediation, customer complaints, and other unique circumstances for each individual asset
  - Site conditions, Property rights, access for maintenance and construction, depth, soil type, environmental sensitivity, surface restoration requirements, and other unique circumstances for each individual asset

Inspection data may also be used to analyze maintenance type and frequency per Appendix B (System Wide Cleaning Program Process and Guidelines).

See Page 3

Appendix C

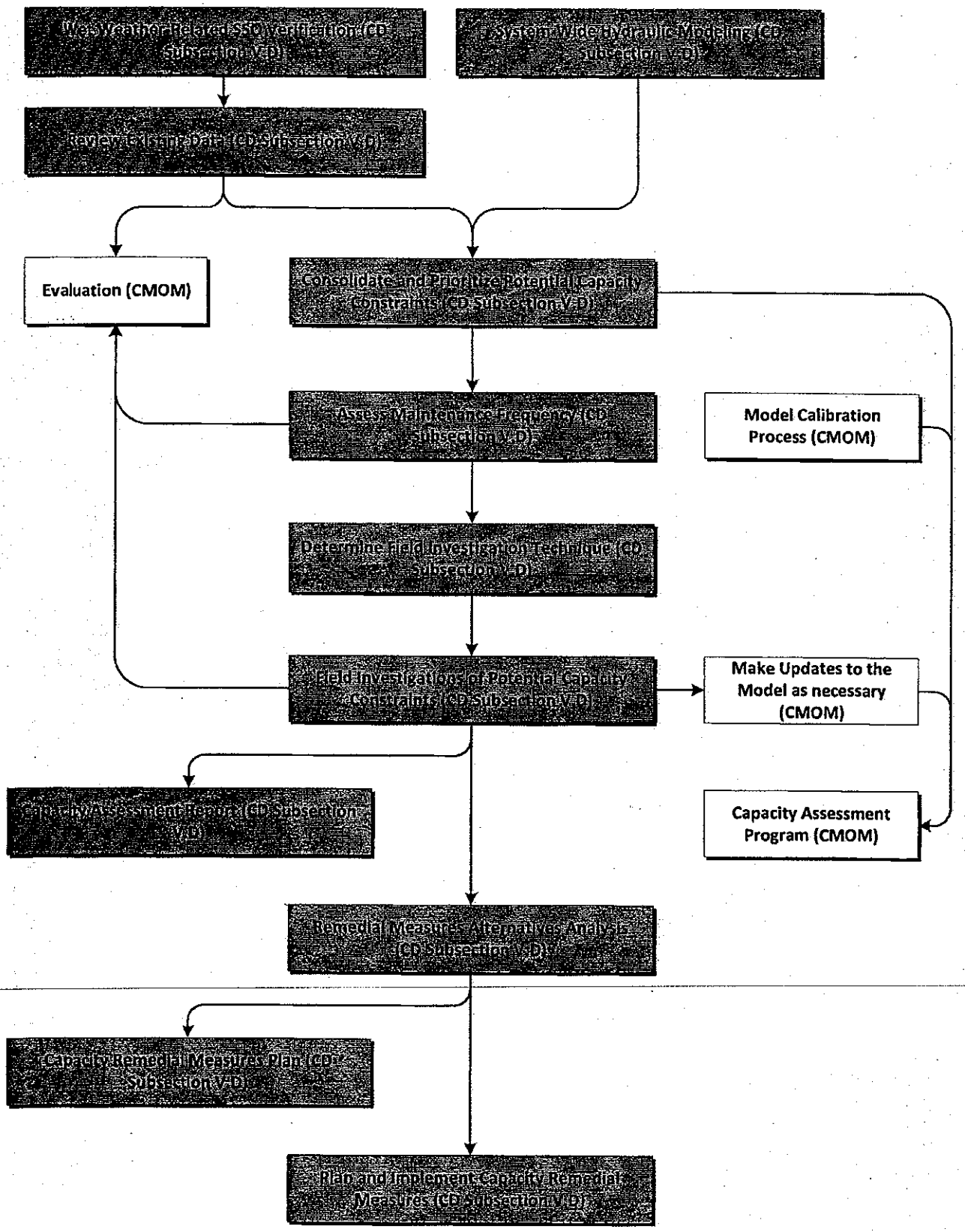
SAWS Condition Assessment and Remediation Program Process and Guidelines



APPENDIX D

Appendix D

SAWS Capacity Assessment and Remediation Program Process and Guidelines Overview



Appendix D

SAWS Capacity Assessment and Remediation Program Process and Guidelines

Wet Weather-Related SSO Verification (CD Subsection V.D)

- Develop list of historical SSOs that occurred during wet weather events.

Notes

- Wet weather events are rain events that exceed 1-inch over a 24-hour period.

- This process would also be followed for future wet weather related SSOs.

Review Existing Data (CD Subsection V.D)

- Review all available cleaning, CCTV, SSO, flow monitoring, modeling, and other data applicable for each SSO identified above.
- Categorize the SSO as follows:
  - A) Most likely a capacity related SSO: Existing data indicates that there does not appear to be a history of maintenance or structural issues that may have led to the SSO.
  - B) Most likely maintenance related: Existing data indicates that the cause is most likely a maintenance related cause, such as FOG, roots, or debris, but there may also be a capacity constraint at the SSO location.
  - C) Clearly not a capacity related SSO: Existing data indicates the SSO was not capacity related. Examples include isolated events such as pools or cooling towers being drained into the sewer system or cleaning maintenance related issues such as cured in place FOG, roots or debris.

System-Wide Hydraulic Modeling (CD Subsection V.D)

- Apply assessment storm at existing population scenario.
- Identify potential Capacity Constraints.

Notes

- Capacity Constraints are discrete areas of the WCTS that are determined by SAWS consistent with the above (i.e. above a verified capacity issue that is determined to be likely to cause or materially contribute to SSOs due to wet weather events that are within design parameters. See Consolidate and Prioritize Potential Capacity Constraints for potential Capacity Constraint criteria.

- SAWS uses a 5-year, 6-hour storm in the model as the "assessment storm".

- The model is system-wide and generally includes all pipes for flow allocation purposes. Pipes that are 4-inches in diameter and larger are generally modeled, although the model may on occasion include smaller diameter pipes under unique circumstances.

Evaluation (CMOM)

- Maintenance frequency
- Structural Repair
- Monitor

**Notes*

- Evaluation will be performed as part of CMOM

Consolidate and Prioritize Potential Capacity Constraints (CD Subsection V.D)

Priority 1 - Category A SSO per Review of Existing Data and where model also predicts a SSO.

Priority 2 - Where model predicts SSO but with no observed SSO. Category A SSO per Review of Existing Data but model does not predict a SSO.

Priority 3 - Where model predicts Hydraulic Grade Line (HGL) near ground elevation.

Priority 4 - Category B SSO per Review of Existing Data.

Priority 5 - Where pipe design capacity is exceeded for sustained 60 minutes or more but the HGL is not near the ground elevation.

Notes

- The list above represents criteria for SAWS prioritizing the potential Capacity Constraints that may warrant a Field Investigation. This list will be used to prioritize field investigations. In general, starting at the top of the list and working towards lower priorities as higher priority field investigations are concluded. SAWS may reprioritize Potential Capacity Constraints as new information becomes available or adjustments to the model are made.

- Typically, Priorities 1 - 4 are more likely than 5 to warrant field investigation work, though this will always be determined based upon a case-by-case engineering assessment. (For example, some pipes may be designed for the HGL to be above the crown of the pipe).

- Priority 5's shall be kept on a monitoring list or go to Field Investigation as warranted based upon a case-by-case engineering assessment. Priority 5's that do not go to Field Investigation are kept on the potential Capacity Constraint list and monitored as updates are made to the model.

Assess Maintenance Frequency Data (CD Subsection V.D)

- Develop and modify as needed the maintenance frequency for each pipe for investigation to prevent blockages that would significantly reduce design capacity during the investigation.

See Page 3, Determine Field Investigation Technique

Model Calibration Process (CMOM)

- Collect additional flow metering data over time
- Collect additional rain gauge data over time
- Apply appropriate observed storm events to model
- Calibrate the model to match measured flows (for both dry and wet weather flows)
- Assess calibration anomalies and adjust model

**Notes*

- This process currently occurs on each of the 5 basins approximately once every 4 to 6 years (in general, one basin per year). The frequency may increase or decrease depending on growth in basins.

- Model calibration will be performed as part of CMOM

See Page 3, Capacity Assessment Program

Appendix D

SAWS Capacity Assessment and Remediation Program Process and Guidelines

See Page 2

See Page 2

Capacity Assessment Program (CMOM)
SAWS will determine appropriate storm durations, calibrate the model for the appropriate storm durations if sufficient rain events occur, and use the storm durations to identify Potential Capacity Constraints

Make Updates to the Model as necessary (CMOM)
- Such updates may include calibration opportunities based on flow meter data, updates to attributes found during the field investigation, accounting for debris loading, or other relevant new data
**Notes*
- Updates will be performed as part of CMOM

See Page 4

[redacted]