

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MARYLAND**

UNITED STATES OF AMERICA,)	
)	
Plaintiff,)	
)	
and)	
)	
STATE OF MARYLAND,)	
)	
Plaintiff-Intervenor,)	
)	Civil Action No. JFM-02-1524
v.)	
)	
MAYOR AND CITY COUNCIL)	
OF BALTIMORE, MARYLAND,)	
)	
Defendant.)	

CONSENT DECREE

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WHEREAS, Plaintiff, the United States of America ("United States"), by the authority of the Attorney General of the United States and through its undersigned counsel, acting at the request and on behalf of the Administrator of the United States Environmental Protection Agency ("EPA"), has filed a Complaint in this action seeking injunctive relief and civil penalties pursuant to Section 309 of the Clean Water Act, 33 U.S.C. § 1319, naming as defendant the Mayor and City Council of Baltimore, Maryland (hereinafter referred to as "Baltimore") pursuant to Section 309(e) of the Clean Water Act, 33 U.S.C. § 1319(e);

WHEREAS, Plaintiff, the State of Maryland, on behalf of the Maryland Department of the Environment ("MDE"), has filed a motion to intervene, and a Complaint in Intervention against Baltimore for its alleged violations of the Clean Water Act, and Title 9, Subtitle 3 of the Environment Article, Annotated Code of Maryland;

WHEREAS, Baltimore operates publicly owned treatment works ("POTW") that serve the citizens of Baltimore and several surrounding counties;

WHEREAS, the United States alleges that Baltimore has violated and continues to violate Section 301 of the Clean Water Act, 33 U.S.C. § 1311, by discharging untreated sewage from its sewage collection system to the Back River, Patapsco River, and the Chesapeake Bay and several smaller water bodies and other waters of the United States, and the State of Maryland alleges that Baltimore has violated and continues to violate Section 301 of the Clean Water Act, 33 U.S.C. § 1311, and Sections 9-322 and 9-323 of the Environment Article, Annotated Code of Maryland, by discharging untreated sewage from its sewage collection system to the Back River, Patapsco River, and the Chesapeake Bay and several smaller water bodies and other waters of the State of Maryland;

WHEREAS, without making any admission of law or fact, and without admitting any violation of any law or regulation, Baltimore denies that it has willfully or negligently violated any provision of the Clean Water Act and state water pollution control laws. Baltimore further alleges that at all times it has acted in good faith in a sincere effort to comply with the Clean Water Act,

And that any sewage discharges that have occurred to date have been unintentional; and

WHEREAS, in the best interests of the public, and to avoid the expense and delay of litigation, Baltimore wishes to work in a cooperative partnership with MDE and EPA in an effort to continue to enhance water quality and to minimize future discharges to the extent possible, through an agreed-upon program of improvements to Baltimore's Collection System (as defined herein); and

WHEREAS, Baltimore's wastewater collection, treatment and disposal system must treat some 250 millions of gallons each day of wastewater flow generated by Baltimore residents and by an even greater population of residents of surrounding suburban counties, and although Baltimore has heretofore made a substantial public investment to improve water quality and reduce sewage collection system discharges, the Parties acknowledge that further investment of public resources is necessary to continue to maintain and improve Baltimore's sewage collection system and to enhance compliance with the Clean Water Act; and

WHEREAS, the Parties acknowledge that a high degree of cooperation shall be necessary to carry out the terms of this Consent Decree; and it is the Parties' intent to engage in such cooperation and to act in good faith to fulfill the terms of this Consent Decree; and

WHEREAS, the Parties agree, and the Court finds, that settlement of the claims alleged in the Complaint and the Complaint in Intervention without further litigation or trial of any issues, is fair, reasonable and in the public interest and that the entry of this Consent Decree is the most appropriate way of resolving the claims alleged in the Complaint and the Complaint in Intervention.

NOW THEREFORE, it is hereby ORDERED, ADJUDGED and DECREED as follows:

I. JURISDICTION

1. This Court has jurisdiction over the subject matter of this action and over the Parties to this action pursuant to Section 309(b) of the Clean Water Act, 33 U.S.C. § 1319(b), and 28 U.S.C. §§ 1331 and 1367. The Complaint states claims upon which relief may be granted against

Baltimore under Section 309 of the Clean Water Act, 33 U.S.C. § 1319, and Sections 9-339 and 9-342 of the Environment Article, Annotated Code of Maryland, for injunctive relief and civil penalties. Baltimore waives any and all objections that it might have to the Court's jurisdiction to enter and enforce this Consent Decree. Authority to bring this action is vested in the United States Department of Justice pursuant to Section 506 of the Clean Water Act, 33 U.S.C. § 1366, and 28 U.S.C. §§ 516 and 519. Authority to bring this action is vested in the Office of the Attorney General of Maryland pursuant to Section 9-344 of the Environment Article, Annotated Code of Maryland.

II. VENUE

2. Venue is proper in this Court pursuant to Section 309(b) of the Clean Water Act, 33 U.S.C. § 1319(b), and 28 U.S.C. §§ 1391(b) and 1395(a).

III. BINDING EFFECT

3. The provisions of this Consent Decree shall apply to and be binding on Baltimore, its officers, directors, employees, agents, servants, successors and assigns, and upon the United States and State of Maryland.

4. Effective from the Date of Entry of this Consent Decree until its termination, Baltimore shall give written notice, and provide a copy, of this Consent Decree to any person or entity to whom Baltimore may transfer ownership or operation of its POTWs, including any portion of the Collection System. Baltimore shall notify EPA, MDE and the United States Department of Justice in writing of any successor in interest at least twenty-one (21) days prior to any such transfer.

5. Beginning no later than thirty (30) days after the Date of Entry of this Consent Decree, Baltimore shall provide a copy of all relevant and applicable portions of this Consent Decree to each engineering, consulting and contracting firm retained to perform the work or any portion thereof, required by this Consent Decree once the contract relating to such work has been approved by the Baltimore City Board of Estimates. Any action taken by any contractor or consultant retained to implement Baltimore's duties under this Consent Decree shall be considered an action

of Baltimore for purposes of determining compliance with this Consent Decree. In an action to enforce this Consent Decree, Baltimore shall not assert as a defense against the United States or the State of Maryland that any of its officers, directors, employees, agents, servants, contractors, successors or assigns are separately and individually responsible for Baltimore's failure to perform under this Consent Decree; however, this Consent Decree shall not limit Baltimore's right to take all appropriate action against any person or entity that causes or contributes to Baltimore's failure to perform.

IV. PURPOSE

6. The express purpose of the Parties entering into this Consent Decree is to take all measures necessary to enable Baltimore to comply with the Clean Water Act, the regulations promulgated thereunder, the Maryland water pollution control laws, the regulations promulgated under such laws, and Baltimore's National Pollutant Discharge Elimination System Permits Nos. MD 21555 and MD 21601.

V. DEFINITIONS

7. Unless otherwise defined herein, the terms used in this Consent Decree will have the meaning given to those terms in the Clean Water Act, 33 U.S.C. §§ 1251 et seq., and the regulations promulgated thereunder or, if not defined in the Clean Water Act or its regulations, then as defined in Title 9, Subtitle 3 of the Environment Article, Annotated Code of Maryland, and the regulations promulgated thereunder.

The following terms used in this Consent Decree, its appendices, and EPA and MDE approved studies and plans will be defined as follows:

A. "Back River Permit" shall mean NPDES Permit Number MD 21601 and State Discharge Permit Number 93-DP-0580A issued to Baltimore pursuant to Section 402 of the Clean Water Act, 33 U.S.C. § 1342, and Section 9-323 of the Environment Article, Annotated Code of Maryland, for the Back River Wastewater Treatment Plant located at 8201 Eastern Boulevard, Baltimore, MD 21224, and any future, extension, modification or re-issuance of this permit.

B. "Collection System" shall mean the collection and transmission system (including all pipes, force mains, sanitary sewer lines, combined sewer lines, overflow structures, regulators, lift stations, pumping stations, manholes, and appurtenances thereto) owned by Baltimore and designed to convey sewage to the treatment plant(s) or in wet weather to an overflow, including portions of the system added after the Date of Lodging of the Consent Decree.

C. "Combined Sewer Overflow" shall mean any spill, release, or discharge from Baltimore's Combined Sewer System.

D. "Combined Sewer Overflow Structure" shall mean a structure designed to discharge material from a Combined Sewer System at a point prior to the sewage treatment plant(s). All currently known Combined Sewer Overflow Structures are identified in Appendix A.

E. "Combined Sewer System" shall mean the portions of the Collection System designed to convey sanitary sewage and storm water through a single-pipe system to a POTW or to an overflow point in the Collection System. A map of Baltimore's Combined Sewer System is identified in Appendix B.

F. "Construction Completion" of a construction project under Paragraph 8 or a rehabilitation or other corrective action project proposed under Paragraph 9 shall mean the point in time the new, modified, or rehabilitated facilities are fully functioning and are on line and in service.

G. "Day" or "days" as used herein shall mean a calendar day or calendar days. When the day a report or other deliverable is due under this Consent Decree falls on a Saturday, Sunday or any Federal, State of Maryland or Baltimore legal holidays, Baltimore shall have until the next calendar day that is not one of the aforementioned days for submittal of such report or other deliverable, with the exception of overflow reports required by Paragraph 17 of this Consent Decree.

H. "Dry Weather Overflow" shall mean any discharge from the Collection System that is unrelated to precipitation related flows (including storm water and snow melt runoff). For

purposes of this Consent Decree only, it shall be presumed that flow in the Collection System more than 72 hours after a rain event or snow melt event is unrelated to rain or snow melt.

I. "Force main" shall mean any pipe that receives and conveys wastewater from the discharge side of a pump. A force main is intended to convey wastewater under pressure.

J. "Gravity sewer line" shall mean a pipe that receives, contains and conveys wastewater not normally under pressure, but is intended to flow unassisted under the influence of gravity. Gravity sewers are not intended to flow full under normal operating conditions.

K. "Hydrograph" shall mean the graphical representation of flow volume over time of wastewater, infiltration, and inflow at a particular point in the Collection System. Hydrographs characterize diurnal variations in wastewater flow rates, as well as flow response to a wet weather event, at a particular point in the Collection System.

L. "Major Gravity Line" shall mean any of the following:

- i. all gravity sewer lines that are ten inches in diameter or larger;
- ii. all eight-inch lines that convey or are necessary to accurately represent flow attributable to a service area in each of the Collection Systems sewershed's service areas;
- iii. all gravity sewer lines that convey wastewater from one pumping station service area to another pumping station service area; and
- iv. All gravity sewer lines that have caused or contributed, or that Baltimore knows are likely to cause or contribute, to capacity-related Overflows.

M. "Overflow" shall mean any spill, release, or discharge of wastewater from any portion of Baltimore's Collection System, except from NPDES permitted outfalls.

N. "Parties" shall mean the United States of America, the State of Maryland, and the Mayor and City Council of Baltimore City.

O. "Patapsco Permit" shall mean NPDES Permit Number MD 21555 and State Discharge Permit Number 89-DP-0581, issued to Baltimore pursuant to Section 402 of the Clean Water Act,

33 U.S.C. § 1342, and Section 9-323 of the Environment Article, Annotated Code of Maryland, for the Patapsco Wastewater Sewage Treatment Plant located at 3501 Asiatic Avenue, Baltimore, MD 21226, and any future, extension, modification or re-issuance of this permit.

P. “Private Service Connection Lateral” shall mean that portion of the Collection System, not owned by Baltimore, used to convey wastewater from a building or buildings to that portion of the Collection System owned by Baltimore.

Q. “Pumping Station” shall mean facilities comprised of pumps which lift wastewater to a higher hydraulic elevation, including all related electrical, mechanical, and structural systems necessary to the operation of that pumping station. For the purposes of this document, the term “Pumping Station” shall be limited to the following pumping stations:

- i. Eastern Avenue;
- ii. Brooklyn;
- iii. Dundalk;
- iv. Jones Falls;
- v. Locust Point;
- vi. Quad Avenue;
- vii. McComas Street; and
- viii. Westport.

R. “Separate Sanitary Sewer System” shall mean a conduit designed to carry only sewage, and not stormwater, from residences, commercial buildings, industrial plants and institutions for treatment at either the Patapsco or Back River wastewater treatment plants.

S. “Sanitary Sewer Overflow” shall mean any spill, release, or discharge from any portion of the Collection System other than Baltimore’s Combined Sewer System.

T. “Sanitary Sewer Overflow Structure” shall mean any structure constructed to allow discharge from the Separate Sanitary Sewer System at a point prior to the headworks of either the Patapsco or Back River wastewater treatment plants. All currently known Sanitary Sewer

Overflow structures are identified in Appendix C.

U. “Small Pumping Station” shall mean the Pumping Stations identified in this Paragraph and their respective electrical, mechanical, and structural systems that are necessary to operation of that Pumping Station. The Small Pumping Stations are:

- i. Fort McHenry;
- ii. Clinton Street Pumping Stations; and
- iii. Any other small, package-type macerating pump serving a limited number of users.

VI. REMEDIAL MEASURES

8. Elimination of Sanitary Sewer Overflow and Combined Sewer Overflow Discharges

A. General Requirements: Baltimore shall comply at all times with the Clean Water Act and the regulations promulgated thereunder, Title 9, Subtitle 3 of the Environment Article, Annotated Code of Maryland and the regulations promulgated thereunder, and all terms and conditions of the Back River Permit and the Patapsco Permit. Baltimore shall eliminate Sanitary Sewer Overflows and Dry Weather Overflows from the Collection System through development and implementation of the measures set forth in Paragraphs 8 through 15. In addition, Baltimore shall eliminate all Combined Sewer Overflow discharges from its Collection System through development and implementation of the measures set forth in Paragraphs 8 through 15.

B. Construction Projects: Baltimore shall complete the construction projects identified in Appendix D for the Jones Falls, Herring Run, and Gwynns Falls sewersheds, the Gwynns Run portion of the High Level sewershed, and the Combined Sewer Areas according to the milestone dates set forth in Appendix D. In addition, Baltimore shall eliminate the Combined Sewer Overflow and Sanitary Sewer Overflow structures identified in Appendices A and C no later than the milestone dates specified in Appendix D for the elimination of such structures. Further, in accordance with the milestone dates set forth in Appendix D, Baltimore shall modify the Sanitary Sewer Overflow structure at the Jones Falls Pumping Station to eliminate the potential to discharge

wastewater from such structure, except in the event of operator intervention. Any discharge from the Jones Falls Pumping Station (including those caused by operator intervention) shall be considered an unpermitted discharge for purposes of compliance with the Clean Water Act and Maryland statutes and/or an unauthorized Overflow for purposes of this Consent Decree. In the event that Baltimore fails to eliminate the Sanitary Sewer Overflow Structures as required by this Paragraph or provide certification that it has done so, Baltimore shall submit to EPA and MDE for their approval, no later than thirty (30) days after the date the certification was due, a plan and schedule for the elimination of any Sanitary Sewer Overflow Structures. The milestone dates set forth in Appendix D are incorporated into, and enforceable under, the Consent Decree as if fully set forth herein.

C. Separate Sanitary Sewer Characterization Report:

No later than ninety (90) days after the Date of Entry of this Consent Decree, Baltimore shall submit to EPA and MDE a Separate Sanitary Sewer Characterization Report that includes:

- i. A map that depicts the Collection System. The map shall depict the locations of the Sanitary Sewer Overflow structures, the sanitary sewers associated with those Sanitary Sewer Overflow structures as well as outfalls, regulators, manholes, and Pumping Stations;
- ii. For the five (5) years preceding the Date of Entry of the Consent Decree, a list that identifies (where available) the frequency, date, duration and volume (measured durations and volumes where available, or best estimates) of Sanitary Sewer Overflows (on a per event basis), and the magnitude of rainfall events which have typically resulted in overflows for each discharge location; and
- iii. The cause(s) or condition(s) that contributed to each Sanitary Sewer Overflow (if known).

D. Elimination of Combined Sewer Overflows: No later than June 30, 2002, Baltimore shall separate the Combined Sewer System and eliminate all Combined Sewer Overflow Structures

from the Collection System in the Walbrook neighborhood of Baltimore. Baltimore shall certify to EPA and MDE by no later than June 30, 2003, in accordance with the requirements of Paragraph 18 (“Reporting”), that it has separated the Combined Sewer System and eliminated all Combined Sewer Overflow Structures from the Walbrook neighborhood. No later than June 30, 2005, Baltimore shall separate the Combined Sewer System and eliminate all Combined Sewer Overflow Structures from the Collection System in the Forest Park neighborhood of Baltimore. Baltimore shall certify in accordance with Paragraph 18 (Reporting) to EPA and MDE by no later than June 30, 2006, that it has separated the Combined Sewer System and has eliminated all Combined Sewer Overflow Structures from the Forest Park neighborhood. In the event that Baltimore fails to separate any portion of the Combined Sewer System and eliminate any Combined Sewer Overflow Structures as required by this Paragraph, or provide the certification that it has done so, Baltimore shall submit to EPA and MDE for their approval, no later than thirty (30) days after the date the certification was due, a plan and schedule for the separation of any remaining portions of the Combined Sewer System and the elimination of any remaining Combined Sewer Overflow Structures. No later than thirty (30) days after receipt of EPA’s and MDE’s approval of Baltimore’s plan and schedule, Baltimore shall implement the plan in accordance with the approved schedule.

E. Flow and Rainfall Monitoring for Paragraph 8 Construction Projects:

i. For construction projects scheduled to begin prior to December 31, 2003, Baltimore shall provide to EPA and MDE a summary of all flow monitoring data collected prior to beginning construction of such project.

ii. For construction projects scheduled to begin after December 31, 2003, Baltimore shall monitor flow and rainfall for eighteen months at all locations necessary to allow the characterization of flow in the portions of the Collection System and overflows impacted from such construction project(s). Such flow and rainfall monitoring shall be performed in accordance with the requirements of Paragraph 9.E.iii. a, b, c and d.

iii. Following completion of any construction project, Baltimore shall monitor flow and rainfall for a period of eighteen months to ascertain the effectiveness of the construction project. Such flow monitoring shall be performed in accordance with the requirements of Paragraph 9.E.iii. a, b, c and d.

iv. By mutual agreement of the Parties, the eighteen (18) month flow and rainfall monitoring period(s) required by Paragraph 8.E.ii and iii may be shortened.

v. The results of any flow and rainfall monitoring conducted by Baltimore pursuant to this Paragraph and completed prior to the date a Sewershed Study and Plan for a sewershed in which a construction project is located is due shall be submitted to EPA and MDE as part of such Sewershed Study and Plan. The results of any flow and rainfall monitoring conducted by Baltimore pursuant to this Paragraph and completed after the date a Sewershed Study and Plan for a sewershed in which a construction project is located is due shall be submitted to EPA and MDE at the time Baltimore certifies that the construction project has been completed.

F. Progress Reports: Beginning thirty (30) days after the end of the first full calendar quarter following the Date of Entry of the Consent Decree, and thirty (30) days after the end of each calendar quarter thereafter, Baltimore shall report its progress towards completing the work described for each sewershed required by this Paragraph 8.

9. Collection System Evaluation and Sewershed Plans

A. In accordance with the schedules and procedures specified in this Paragraph 9 of the Consent Decree, Baltimore shall evaluate the Collection System and propose to EPA and MDE a plan for future rehabilitation and other corrective action for each sewershed (“Sewershed Study and Plan”). As specified in this Paragraph 9, Baltimore shall inspect its Collection System in accordance with the criteria specified in Paragraph 9.D, evaluate infiltration and inflow (“I/I”) into the Collection System using all appropriate rainfall and flow monitoring data as specified in Paragraph 9.E, and evaluate the Collection System’s capacity to collect and convey peak flows experienced by or predicted for the Collection System as specified in Paragraph 9.F. Each

Sewershed Study and Plan proposed by Baltimore shall include the plan elements identified in Paragraph 9.C and shall present the results of the Collection System inspections, the I/I evaluation, and the Long-Term Capacity/Peak Flow Management evaluations. In addition, each Sewershed Study and Plan shall include specific rehabilitation projects and/or other corrective actions to address the deficiencies identified by Baltimore during its evaluation of its sewersheds. Each Sewershed Study shall include a schedule for completion of any proposed rehabilitation projects and/or other corrective actions. Any schedule proposed by Baltimore in its Sewershed Study and Plans shall not extend beyond January 1, 2016.

B. Sewershed Study and Plan: Baltimore shall complete an evaluation for each sewershed and submit to EPA and MDE for approval a Sewershed Study and Plan for such sewershed by the dates specified below:

- i. Jones Falls – January 1, 2009;
- ii. Herring Run – July 1, 2009;
- iii. Gwynns Falls – July 1, 2010;
- iv. High Level – January 1, 2010;
- v. Low Level – January 1, 2010;
- vi. Pataspcu – July 1, 2010;
- vii. Dundalk – July 1, 2010; and
- viii. Outfall – July 1, 2010.

C. The Sewershed Study and Plan Elements: In each Sewershed Study and Plan, Baltimore shall:

- i. Evaluate the effectiveness of the projects (completed or proposed) pursuant to Paragraph 8.B (“Construction Projects”). Baltimore shall use rainfall and flow monitoring data collected in accordance with requirements of Paragraph 9.E.iii. of the Consent Decree, and shall use the model developed in accordance with Paragraph 12 of the Consent Decree, to demonstrate the effectiveness of the

Construction Projects;

- ii. Identify all deficiencies discovered during the Collection System inspections conducted pursuant to Paragraph 9.D;
- iii. Identify all rehabilitation and other corrective actions taken by Baltimore (including but not limited to grouting, point repairs, line replacement) to address the deficiencies identified during evaluation of a sewershed;
- iv. Identify all rehabilitation and other corrective actions proposed to be taken by Baltimore (including but not limited to grouting, point repairs, line replacement) to address the deficiencies identified during evaluation of a sewershed;
- v. Describe the decision-making criteria used to select future corrective action;
- vi. Propose a plan and schedule for future evaluation of the Collection System within the sewershed that applies the decision-making criteria identified in Paragraphs 9.D.iv and 13.A.i (requiring annual routine inspections of the Collection System);
- vii. Propose a plan and schedule for implementing rehabilitation and other corrective action determined necessary either to correct deficiencies identified during the evaluations of Baltimore's sewersheds or to ensure operation of the Collection System without causing or contributing to a Sanitary Sewer Overflow. For purposes of this Paragraph only, the term "rehabilitation" shall be interpreted in accordance with the meaning ascribed to that term in Chapters 5 and 6 of the Handbook: Sewer System Infrastructure Analysis and Rehabilitation, EPA/625/6-91/030, Oct. 1991 ("SSES Handbook"), and in accordance with the technical procedures for sewer system rehabilitation set forth in Chapter 6 of the SSES Handbook. The proposed plan shall include:
 - a. A description of the proposed rehabilitation and other corrective actions to be implemented for the particular sewershed. Any rehabilitation or other corrective actions proposed shall be designed to address defects identified in

- the Sewershed Study and Plan including but not limited to activities to repair or replace portions of the Collection System, and address and resolve issues related to capacity, and measures to eliminate unauthorized discharges;
- b. The prioritization scheme developed and applied to the rehabilitation projects or other corrective action scheduled under this Paragraph 9.c.vii; and
 - c. An estimate of the cost necessary to complete any proposed rehabilitation and other corrective actions;
- viii. Propose a plan and schedule for eliminating those physical connections (i.e., cross-connections) between the Collection System and the storm water collection system that allow or have the potential to allow sanitary waste to be discharged to the storm water collection system;
- ix. Determine for each sewershed the range of storm events as specified in Paragraph 9.F. for which the Collection System in its existing condition can convey peak flows without the occurrence of Sanitary Sewer Overflows. As part of its analysis, Baltimore shall identify all modeled components of the Collection System that cause or contribute to flow restrictions or that have the potential to cause or contribute to overflows;
- x. Predictively determine for each sewershed the range of storm events for which the Collection System will be able to convey peak flows without the occurrence of Sanitary Sewer Overflows. Such determination shall assume completion of the construction projects required by Paragraph 8 of this Consent Decree, and completion of the proposed rehabilitation or other corrective action projects recommended by the Sewershed Study and Plan required by this Paragraph 9. As part of its analysis, Baltimore shall identify all modeled components of the

Collection System that cause or contribute to flow restrictions or that have the potential to cause or contribute to overflows;

- xi. Present the results of the rainfall and flow monitoring conducted in the sewershed, including a map that depicts all monitored locations, dates of monitoring, a description of quality assurance and quality control analyses performed for samples collected and data analyzed and the results of those analyses (i.e., summarize data quality assurance and data “lost” or “qualified”), a description of the smoke testing and dye testing activities performed in the sewershed, and summary of the results of such testing, a quantification of the rates of I/I for the sewershed and the portions of the sewershed’s Collection System impacted by I/I, and any identified sources of I/I to the Collection System located in the sewershed;
- xii. Baltimore shall incorporate into each Sewershed Study and Plan a description of additional data collection activities that will be implemented after the completion of rehabilitation and other corrective action(s) proposed pursuant to Paragraphs 9.C.vi. to assess their efficacy; and
- xiii. Certify that the geographic information system (“GIS”) described in Paragraph 14.B is fully functioning and capable of displaying the information described in Paragraph 14.B.i through iv, above, for that sewershed.

D. Collection System Inspections:

i. Scope and Nature of Inspections: As part of the evaluation of each sewershed, and as a precondition to submitting a Sewershed Study and Plan for each sewershed listed in Paragraph 9.B, Baltimore shall complete the inspection of:

- a. All gravity lines having a diameter of eight inches or greater using closed circuit television;
- b. all force mains; and
- c. all appurtenances – i.e., manholes, junction chambers, siphons.

ii. Baltimore shall perform the inspections of the Collection System in accordance with the SSES Handbook, “Specification Guidelines; Wastewater Collection Systems Maintenance and Rehabilitation” by the National Association of Sewer Service Companies (“NASSCO”) specifications and standards (hereinafter “NASSCO Guidelines”), and sound engineering practice. Inspection of force mains will be carried out utilizing one or more methodologies appropriate to the specific characteristics of each force main; these methodologies may include, but are not limited to, visual/CCTV, radiography, ultrasonic/sonar and coupon sampling. Force main inspections shall be carried out in such a manner as to allow adequate assessment of the condition of all parts of each force main. In addition, Baltimore shall use all appropriate means to identify sources of I/I, including smoke and/or dye testing. Baltimore shall use smoke and/or dye testing in accordance with the protocols and procedures described in the SSES Handbook.

iii. Cross-connections: Baltimore shall identify all physical connections between the Collection System and its stormwater collection system. Consistent with the requirements of Paragraph 9.C.viii, Baltimore shall propose in its Sewershed Study and Plan for each of its sewersheds an expeditious schedule for the elimination of each such connections.

iv. Baltimore shall record and prioritize rehabilitation and other corrective action proposed under Paragraph 9.C. for all defects identified through the inspections required under Paragraph 9.D.

v. Re-inspection: Together with each Sewershed Study and Plan, Baltimore shall submit a schedule for re-inspection of each sewershed’s Collection System consistent with the requirements of this Paragraph 9.D and the elements of the operation and maintenance program as approved by EPA and MDE pursuant to Paragraph 13 of the Consent Decree. Re-inspection of the Collection System consistent with the requirements of Paragraph 9.D shall be completed no later than January 1, 2016. Any proposed re-inspection schedule shall include, but not be limited to, a prioritization scheme for further inspection of Collection System components based on the:

- a. Prior identification of defects, including grease blockages and root intrusion;

- b. Expected life of component;
- c. Estimated rate of existing inflow and/or infiltration;
- d. Scheduled rehabilitation or other corrective action of a component; and
- e. A predetermined re-inspection frequency of Collection System components.

vi. Any re-inspection of the Collection System required by Paragraph 9.D.v shall meet the specification guidelines and standards referenced in Paragraph 9.D.ii. For purposes of ascertaining whether a portion of the Collection System has been re-inspected under 9.D.v, those components inspected by Baltimore following replacement or slip-lining pursuant to Paragraphs 8 and 9 of this Consent Decree shall be considered re-inspected.

vii. Where any of the Collection System components have been replaced, rehabilitated, or slip-lined pursuant to this Paragraph 9 or Paragraph 8 of the Consent Decree, Baltimore may request, and EPA and MDE may approve, waiver of the Paragraph 9.D inspection requirements.

E. Infiltration and Inflow (“I/I”) Evaluation:

i. As part of the evaluation of each sewershed, and as a precondition to submitting a Sewershed Study and Plan for any sewershed identified in Paragraph 9.B, Baltimore shall complete the evaluation of I/I into that sewershed’s Collection System. The evaluations shall include identification of sources of infiltration, sources of inflow, and methods for reducing I/I into the Collection System. For purposes of this Paragraph 9 only, the term "evaluation" shall be interpreted in accordance with the meaning ascribed to that term in sub-chapters 3.3, 3.4, 3.5, 3.6 and Chapter 4 of the SSES Handbook and in accordance with the technical procedures for identification of I/I set forth in sub-chapters 3.3, 3.4, 3.5, 3.6, and Chapter 4 of the SSES Handbook.

ii. As part of the I/I evaluations required by Paragraph 9.E.i, Baltimore shall conduct rainfall and flow monitoring to:

- a. Determine baseline I/I rates in each sewershed;
- b. Determine the efficacy of the capital projects completed pursuant to Paragraph 8 to

reduce I/I rates; and

- c. To predict the effectiveness of the capital projects required by Paragraph 8 but not yet completed and any additional rehabilitation, or other corrective action proposed by Baltimore in each Sewershed Study and Plan to reduce peak wet weather flows and/or increase capacity such that Sanitary Sewer Overflows do not occur.

iii. Rainfall and Flow Monitoring:

a. Rainfall Gauges: To monitor the contribution from rainfall to a sewershed within Baltimore's jurisdictional boundary, Baltimore shall use a network of rain gauge stations with a minimum coverage of one (1) rain gauge station per ten (10) square miles as well as data compiled by Doppler radar utilizing a minimum resolution of one (1) pixel per four (4) square kilometers. In the event that Doppler radar is not used for rainfall data collection within Baltimore, Baltimore shall use a network of rain gauge stations with a minimum coverage of one rain gauge station per two (2) square miles with no fewer than three (3) rain gauge stations per sewershed. To measure the contribution from rainfall occurring in portions of the Collection System sewershed's outside Baltimore City limits, at a minimum, Baltimore shall use a combination of at least two rain gauges located at the Baltimore City/Baltimore County jurisdictional boundary in that sewershed and Doppler radar, to achieve a resolution as close to those described above as is practical. Baltimore shall also, where practical and appropriate, locate additional rain gauges within sewershed areas outside its jurisdiction, on properties owned or operated by Baltimore (such as water treatment facilities), or where practical and appropriate, by agreement with third-parties.

b. Flow Monitoring: Flow data shall be collected using a system of permanent and temporary flow monitors placed at locations in the Collection System necessary to allow the characterization of flow from each sewershed service area and the characterization of every known Sanitary Sewer Overflow for a period of eighteen months prior to beginning any of the rehabilitation project(s) to be proposed under Paragraph 9 of the Consent Decree and a period of eighteen months following completion of any such rehabilitation project(s). Baltimore shall

inspect, maintain and, if necessary, calibrate all flow monitors at least once per week. By agreement of the Parties, the eighteen (18) month flow monitoring period(s) required by this Paragraph may be shortened. For flow measurements performed using telemetry, the Parties may agree to alternative inspection and calibration criteria.

c. Baltimore's flow and rainfall monitoring network shall be designed, installed, operated and maintained to provide representative, accurate, and precise data of sufficient quality for use in development, calibration, and verification of the Model as required by Paragraph 12, for at least ninety (90) percent of the scheduled operation time for each meter. Monitoring site selection, equipment selection and installation, calibration, and maintenance; and data quality assurance checks shall all be carried out to optimize monitoring accuracy, and shall all conform with the equipment manufacturers' recommendations and current, good engineering practice. Field calibration results for each meter shall be submitted, along with an evaluation of the accuracy for each meter. These shall include (for flow monitoring) monitoring site diagrams, scattergraph plots of field data sets, manual field depth and velocity measurements, and (if the site is free flowing) the appropriate pipe curve.

d. Baltimore shall conduct its flow and rainfall monitoring in accordance with the SSES Handbook, NASSCO Guidelines, and sound engineering practice. Rainfall and flow measurements shall be collected in accordance with good industry practice and such measurements shall be handled and analyzed consistent with appropriate quality assurance and quality control procedures that will assure that the measurements are representative of flow conditions and that the data are both accurate and precise.

F. Long-Term Capacity/Peak Flow Management:

i. Baltimore shall use the data and information collected and analyzed in its evaluation of each sewershed conducted pursuant to Paragraph 9 of the Consent Decree to evaluate whether the construction projects required by Paragraph 8 of the Consent Decree and the projects it proposes and/or completes pursuant to Paragraph 9 will ensure adequate long-term transmission capacity in

the Collection System. At a minimum, Baltimore shall evaluate the hydraulic capacity of all force mains, major gravity lines, and Pumping Stations and their respective related appurtenances (hereinafter referred to as “Collection System Components”).

ii. As part of this evaluation, Baltimore shall use the information, including I/I rates, it is required to develop pursuant to Paragraph 9 of the Consent Decree, including I/I rates, to assess existing and long-term capacity of the Collection System and to evaluate the ability of the Collection System to transmit peak flows experienced by and predicted for the Collection System. Baltimore shall use flow data and rainfall data collected pursuant to Paragraph 9 and the model required by Paragraph 12 to estimate the impact of peak flows experienced by the Collection System on the capacity of the Collection System Components to manage peak flows. Peak flows shall be determined using flow monitoring conducted pursuant to Paragraph 9.E and shall take into account variables including, but not limited to: the average age of the gravity sewer system; soil-type and porosity (where applicable); maximum, minimum and average yearly groundwater elevations; proximity to surface water bodies; tidal influence; amount of drainage area; service area size; land use; historic I/I data; seasonal population patterns (where applicable); and collection system construction materials.

iii. Baltimore shall determine predicted peak flows for each of its sewersheds under baseline and future flow conditions for each of the following storm events:

- a. The 3-month storm having a duration equal to the time of concentration for the sewershed;
- b. The 20-year, 24-hour storm event; and
- c. Five intermediate storm events, one of which will be the 10-year, 24-hour storm event.

All of the storm events considered shall have temporal rainfall distributions appropriate to the Baltimore region. Baseline conditions shall be those in effect at the time flow metering is completed in each sewershed. Future conditions shall be based on reasonable population and

sewer condition deterioration projections for year 2020. Baltimore shall evaluate the effects of completion of the capital projects required under Paragraph 8 and any projects that it proposes to complete pursuant to each Sewershed Study and Plan. The baseline reference shall be the period during which rainfall and flow monitoring were last carried out. Baltimore may consider the utilization of in-line storage capacity in evaluating the capacity of the Collection System and the adequacy of the Collection System Components to both accurately represent wastewater flow attributable to a service area, and to manage peak flows resulting from storm events. Baltimore shall identify the portions of the Collection System with inadequate capacity for each storm event considered.

iv. Baltimore shall develop I/I hydrographs for each sewershed. The hydrographs shall be developed using:

- a. Historical rainfall and flow data;
- b. Rainfall and flow data collected as required by Paragraph 9.E;
- c. Population data;
- d. Winter water use records; and
- e. Other appropriate information.

Baltimore shall identify and apply widely-used and accepted engineering methodologies to determine baseflow rates and diurnal baseflow variation, dry weather infiltration, relationships between rainfall and wet weather flow volumes and rates in each portion of each sewershed, and to identify a representative hydrograph shape(s). The I/I hydrographs shall be developed for the storm recurrence frequencies identified in Paragraph 9.F.iii. The I/I hydrographs shall be integrated with baseline wastewater, rainfall, and flow data and used in the Model to understand the flow through the Collection System's force mains, major gravity lines, Pumping Stations, and their respective related appurtenances.

v. In identifying the impact of the capital improvement projects required by Paragraph 8 of the Consent Decree, and capital projects that Baltimore proposes in any Sewershed Study and

Plan(s), on the adequacy of long-term transmission capacity and the ability of the Collection System to transmit peak flows, for EPA and MDE, Baltimore shall:

- a. Identify Collection System Components that restrict flow of wastewater through the Collection System that cause or contribute, or are likely to cause or contribute, to Overflows from the Collection System;
- b. Quantify the maximum flow that each component identified in a., above, can convey without causing or contributing to an Overflow;
- c. Identify all components that cannot manage peak flows during a full range of storm events listed in 9.F.iii without causing or contributing to an Overflow; and
- d. Identify the improvements to the Collection System necessary to ensure adequate long-term capacity consistent with the SSES Handbook during a full range of storm events specified in Paragraph 9.F.iii.

Baltimore shall account for the Collection System's existing and modeled capacity, the estimated population for the year 2020, and estimated sewer deterioration rates in identifying the impact of the capital improvement projects as outlined in this Paragraph.

vi. The improvements Baltimore shall consider to assure adequate capacity shall include but not be limited to replacement of malfunctioning Pumping Station equipment, installation of Pumping Station back-up equipment, reduction of inflow and infiltration, and installation of larger replacement sewers or relief sewers.

G. Sewershed Study and Plan(s) Approval and Implementation: Baltimore shall submit its Sewershed Study and Plan(s) by the milestone dates set forth in Paragraph 9.B of the Consent Decree. Within thirty (30) days of receipt of EPA's and MDE's comments on the proposed Sewershed Study and Plan(s), Baltimore shall modify the Sewershed Study and Plan(s) accordingly, and submit the plan of implementation to EPA and MDE for final approval. Upon receipt of EPA's and MDE's final approval of the Sewershed Study and Plan(s), Baltimore shall implement the plan, which shall be incorporated into, and become enforceable under this Consent

Decree. No later than sixty (60) days after receipt of EPA and MDE approval of each Sewershed Study and Plan, Baltimore shall implement the plan, including any schedule for implementation of rehabilitation and other corrective action. The schedules proposed by Baltimore in its Sewershed Study and Plans, and approved by EPA and MDE, are each separately enforceable.

H. Progress Reports:

i. Beginning thirty (30) days after the end of the first full calendar quarter following the Date of Entry of the Consent Decree, and thirty (30) days after the end of each calendar quarter thereafter, Baltimore shall report its progress towards completing the evaluation of each sewershed required by this Paragraph 9. The progress report shall provide a summary of the length (in feet) of gravity sewer lines evaluated in each sewershed during the previous calendar quarter.

ii. Beginning thirty (30) days after the end of the first full calendar quarter following EPA's and MDE's approval of the Sewershed Study and Plan for a particular sewershed, and thirty (30) days after the end of each calendar quarter thereafter, Baltimore shall certify and report to EPA and MDE Baltimore's progress towards implementing and completing each Sewershed Study and Plan. The progress report shall provide the following information:

- a. A summary tabulation of deficiencies identified during the previous calendar quarter through the inspection conducted pursuant to Paragraph 9.A;
- b. The date of completion of the evaluation of each sewershed;
- c. A summary of the length (in feet) of gravity sewer lines evaluated in each completed service area during the previous calendar quarter;
- d. A summary tabulation of deficiencies corrected during the previous calendar quarter; and
- e. A summary of rainfall and flow monitoring data for the three month period ending thirty (30) days before the end of the calendar quarter (organized by sewershed and sewershed service area where appropriate), which shall at a minimum provide daily rainfall amounts, peak hourly rainfall intensity, daily flow volumes, and peak flow

rates for each location at which flow monitoring is carried out.

Baltimore shall submit the information in Paragraph 9.H.ii.e above in either Excel or Lotus 1-2-

3.

10. Illegal Sewer Connections

A. Illegal Private Connections:

Baltimore shall continue to identify and eliminate each illegal stormwater or sewage connection to the Collection System. Within one hundred eighty (180) days after the Date of Entry of this Consent Decree, Baltimore shall take one or more of the following actions consistent with its authority under Article 25 of the Code of the City of Baltimore:

- i. Issue a permit as provided under Article 25, § 2-3(b) of the Code of the City of Baltimore for the discharge to individuals qualified to receive such a permit;
- ii. Initiate an enforcement action to cause the removal of each illegal connection from the Collection System known to Baltimore on the Date of Entry of this Consent Decree; or
- iii. Initiate the discontinuation of wastewater service.

For purposes of this Paragraph of this Consent Decree, the term "enforcement action" shall mean the issuance of an order by the City to the owner of the property from which the illegal connection originates pursuant to Article 25, § 22-3 or § 22-4 citing violation of the requirements of Article 25, § 2-3(a) of the Code of the City of Baltimore, Maryland. The foregoing remedies shall be cumulative and independent and shall not be deemed to exclude the independent and cumulative utilization of other judicial and administrative remedies provided by law or ordinance.

B. Within one hundred twenty days (120) of the Date of Entry of this Consent Decree, and for each calendar quarter thereafter, Baltimore shall submit to EPA and MDE a report that includes:

- i. An updated list of known illegal connections;
- ii. The specific location of each known illegal sewer connection;

- iii. Current status of each known illegal connection (i.e., those newly identified, those still connected, those disconnected, and those newly permitted) in the previous calendar quarter;
- iv. Alternative discharge location or method of discharge;
- v. Identity of person or entity responsible for the known illegal sewer connection; and
- vi. The date each known illegal connection was identified.

For purposes of the initial list of illegal connections provided by Baltimore under this Paragraph, item vi. (“the date each known illegal connection was identified”), above, may be satisfied when Baltimore cannot establish the date it first knew of such illegal connection, by stating “unknown.”

C. Within one hundred twenty days (120) of the Date of Entry of this Consent Decree, Baltimore shall submit to EPA and MDE for approval a plan for implementation and enforcement with regard to illegal connections under Article 25 § 2- 4 and §§ 17-1 et seq. of the Code of the City of Baltimore. The plan shall include at a minimum a:

- i. Proposed annual budget;
- ii. Discussion of the method(s) of enforcement; and
- iii. Program to identify illegal connections and to ensure effective implementation of the ordinance.

D. Within thirty (30) days of receipt of EPA's and MDE's comments on the proposed plan of implementation and enforcement, Baltimore shall modify the plan of implementation and enforcement accordingly, and submit the plan of implementation to EPA and MDE for final approval. Upon receipt of EPA's and MDE's final approval of the plan of implementation and enforcement, Baltimore shall implement the plan, which shall be incorporated into, and become enforceable under this Consent Decree.

E. Beginning thirty (30) days after the first full calendar quarter following the Date of Entry of this Consent Decree, and thirty (30) days after the end of each calendar quarter thereafter,

Baltimore shall certify and report to EPA and MDE the progress Baltimore has made toward complying with the provisions of Paragraph 10.

F. Privately-Owned Portion of a Customer Service Connection Lateral: Where a privately-owned portion of a customer service connection lateral that is neither in the public right-of-way nor in a public sanitary sewer easement is a source of I/I that causes or contributes, or is likely to cause or contribute, to an Overflow from the Collection System, Baltimore, within sixty (60) days of the date of the identification of such a lateral, shall notify the owner(s) of the customer service connection lateral(s) that the lateral(s) is a source of such I/I and shall require the owner(s) to take all appropriate steps to repair, rehabilitate, replace, or terminate that customer service connection lateral. Baltimore shall, within six months of identification of a customer service connection lateral that is a source of such I/I, either complete the repair, rehabilitation, replacement, or termination of the customer service connection lateral or initiate enforcement action to cause the repair, rehabilitation, replacement, or termination of a customer service connection lateral where the owner of a privately-owned portion of the customer service connection lateral has failed, after reasonable notice, to take all appropriate steps to repair, rehabilitate, replace, or terminate a customer service connection lateral that is a source of such I/I. For purposes of this Paragraph of this Consent Decree, the term "enforcement action" shall mean the issuance of an order to the owner by the City pursuant to Article 25, § 22-3 or § 22-4 citing violation of the requirements of Article 25, § 2-3 of the Code of the City of Baltimore, Maryland. The foregoing remedy shall not be exclusive of other judicial and administrative remedies provided by law or ordinance.

11. Pumping Station Inspection, Rehabilitation, and Repair

A. Pumping Station Rehabilitation/Repair: Baltimore shall rehabilitate the Pumping Stations identified below:

- i. Baltimore shall complete the rehabilitation work of the Brooklyn Pumping Station, as described in Appendix E, on or before October 31, 2001;

- ii. Baltimore shall complete the rehabilitation work of the Dundalk Pumping Station, as described in Appendix E, on or before October 31, 2001;
- iii. Baltimore shall complete the rehabilitation work of the Jones Falls Pumping Station, as described in Appendix E, on or before November 30, 2001;
- iv. Baltimore shall complete the repair work to the Locust Point Pumping Station, as described in Appendix E on or before October 31, 2004;
- v. Baltimore shall complete the rehabilitation work of the Quad Avenue Pumping Station, as described in Appendix E, on or before December 31, 2003; and
- vi. Baltimore shall replace or upgrade the bar screen at the Westport Pumping Station, as described in Appendix E, on or before October 31, 2004.

B. Pumping Station Inspection Procedures:

i. Baltimore shall continue to inspect each Pumping Station twice daily until such time as the supervisory control and data acquisition (“SCADA”) system required by Paragraph 11.C is on-line and Baltimore is able to remotely monitor each Pumping Station’s operation for the parameters specified in Paragraph 11.C at that Pumping Station. At such time, Baltimore shall inspect each Pumping Station once daily.

ii. Baltimore shall conduct the inspections required by Paragraph 11.B.i to ensure that the Pumping Stations are in good working order according to the inspection checklists attached hereto as Appendix F. Baltimore shall verify that each Pumping Station is in good working order by completing for each inspection the checklist attached as Appendix F. Such checklists shall be maintained by Baltimore in accordance with the requirements of Paragraph 66 (Recordkeeping).

iii. For each deficiency identified during an inspection conducted in accordance with requirements of Paragraph 11.B, Baltimore shall either correct the deficiency within eight hours, or, alternatively, issue a work order for the correction of the deficiency, in which Baltimore shall assign a priority ranking in accordance with the ranking system attached hereto as Appendix G, and complete action necessary to correct such deficiency within the time frame corresponding to

the priority ranking. All such deficiencies shall be corrected by no later than six (6) months from the date of the inspection in which that deficiency was first observed.

iv. Baltimore shall maintain at each Pumping Station the operation and maintenance manual required pursuant to Paragraph 11.F.

C. Pumping Station Remote Monitoring:

i. Baltimore shall upgrade its SCADA system for remote monitoring of Pumping Stations no later than two (2) years from the Date of Entry of this Consent Decree.

ii. The new SCADA system shall continuously monitor, report, and transmit the following parameters for each Pumping Station:

- a. Wet well high level and low level alarms;
- b. Dry well flood alarms;
- c. Dry well sump pumping failure, where available;
- d. Flow (instantaneous and average) determined from a flow meter;
- e. Failure of any one of the following parameters (as a single alarm):
 1. loss of three-phase power;
 2. single phase condition;
 3. phase reversal;
 4. over-voltage and under-voltage;
 5. use of standby power;
 6. failure of standby power; and
 7. second power source;
- f. Pump failure (for each pump);
- g. Pump running times;
- h. Pump starts; and
- i. Remote signal failure alarms.

Set points may be established at each Pumping Station and/or the location at which Pumping

Station parameters are monitored. System performance relative to such set points shall be observed by operators monitoring Pumping Stations remotely.

iii. The SCADA system shall transmit an alarm notifying Baltimore of Sanitary Sewer Overflows at the Jones Falls Pumping Station and shall continuously monitor, report, and transmit the date, time, and estimated volume of any Sanitary Sewer Overflow.

iv. With respect to all Pumping Stations, system monitoring data of wet well levels, force main pressures, and energy requirements (kilowatts) shall be stored in an archival data base for a period of five years. In addition, the Pumping Station operating hours for each pump shall be recorded monthly and entered into an archival data base. Baltimore shall retain for each month the 24-hour maximum and the monthly average flow data until termination of this Consent Decree.

v. The new SCADA system shall enable Baltimore to store a record of each alarm generated by the SCADA system that includes the date, time, location, and parameter of the alarm.

vi. Prior to the SCADA system upgrade, Baltimore shall continue to remotely monitor its Pumping Stations using its existing SCADA system.

vii. Prior to the SCADA system upgrade, Baltimore shall archive alarm data from the existing SCADA system.

D. Pumping Station Equipment Inventory: Within thirty (30) days of completion of the Pumping Station projects required under Paragraph 11.A, Baltimore shall assign a unique identification number to each pump, motor, bar screen, and sensor at the respective Pumping Station and update the maintenance information management system (“MIMS”) equipment inventory required under Paragraph 14 to include the upgraded equipment. If physically practicable, Baltimore shall place an identification tag on each such piece of equipment. For Pumping Stations not identified in Paragraph 11.A, Baltimore shall assign equipment identification numbers to each critical component by no later than ninety days (90) after the Date of Entry of the Consent Decree.

E. Pumping Station Preventative Maintenance: Baltimore shall implement a pumping

station preventative maintenance program to ensure the proper operation and maintenance of its pumping stations by implementing the following measures:

- i. Within ninety (90) days of completion of each rehabilitation/repair project required under Paragraph 11.A, Baltimore shall update the preventative maintenance standard operating procedures and schedules stored in the MIMS system to reflect all new and/or rehabilitated equipment.
- ii. Within ninety (90) days of the Date of Entry of the Consent Decree, Baltimore shall develop a procedure (or document existing procedures) for determining the cause of equipment and/or system failures and identifying preventive maintenance measures for minimizing future failures.
- iii. Routinely track preventative maintenance of Pumping Stations (through MIMS or other maintenance tracking systems), including, but not be limited to, the following:
 - a. Appropriate, necessary and periodic service and calibration of all instrumentation, including flow meters, liquid level sensors, alarm systems, elapsed time meters, and remote monitoring equipment;
 - b. Appropriate, necessary and periodic inspection and service for each Pumping Station, including engines, motors, generators, pumps, wet wells, Pumping Station valves, and related equipment; and
 - . Appropriate, necessary and periodic inspection and testing and, if necessary, servicing of all pumps including impellers, seals and bearings, wear clearances, couplings, drives and motors.

F. Pumping Station Operation and Maintenance Manuals: Within ninety (90) days of the Date of Entry of the Consent Decree, Baltimore shall update the existing operation and maintenance manuals. Each operation and maintenance manual shall reflect current station configuration, equipment, and characteristics. Each manual shall provide operating parameter value ranges representing recommended operating levels, and a summary of historical pump run

times. Baltimore shall update the operation and maintenance manual for each Pumping Station, no later than fifteen (15) months after the date for completion of that Pumping Station rehabilitation and repair program identified in Paragraph 11.A.

G. Progress Reports: Beginning thirty (30) days after the end of the first full calendar quarter following the Date of Entry of this Consent Decree, and thirty (30) days after the end of every calendar quarter thereafter, Baltimore shall certify and report to EPA and MDE the progress of Baltimore's Pumping Station inspection and repair program. The progress report shall:

- i. List each Pumping Station;
- ii. Identify the date of completion of the inspection of each Pumping Station;
- iii. Identify the date of completion of the repair of each Pumping Station;
- iv. Describe the repair or other improvement taken or to be taken with respect to each Pumping Station for which Baltimore has identified either an equipment malfunction or physical deficiencies that could lead to equipment malfunction; and
- v. Identify whether a Pumping Station has caused or contributed to an overflow condition during the calendar quarter.

Beginning thirty (30) days after the end of the first full calendar quarter following the Date of Entry of this Consent Decree, and thirty (30) days after the end of each calendar quarter thereafter, Baltimore shall certify and report to EPA and MDE the progress Baltimore has made toward installation and operation of the new SCADA system. This Paragraph shall continue until such time as remote monitoring equipment for each Pumping Station in Appendix E is on-line and, in fact, operational for a period of at least ninety (90) days. Baltimore shall report on a quarterly basis the results of all the failure analyses performed using the procedure required under Paragraph 11.E.ii.

12. Collection and Transmission System Model

A. Baltimore shall design, purchase, or develop and install, implement, and maintain a current widely used and accepted (e.g., "XP-SWMM") computerized collection and transmission

system model or models (the "Model") for the Collection System to evaluate the impact of I/I rehabilitation projects, proposed system modifications, upgrades, and expansions to the transmission capacity and performance of the Collection System. Baltimore shall develop a Model or Models meeting the requirements of this Paragraph for each sewershed and that includes the Model elements identified in Paragraph 12.B. The Model(s) and the data collection activities upon which they are based, shall be developed and implemented so as to ensure that the Model(s) are fully integrated for the Collection System. The integrated Model(s) shall allow Baltimore to assess the capacity of its Collection System, as provided herein, and to identify the measures necessary to address capacity limitations as required by Paragraph 9.F.

B. Model Elements:

- i. The Model required by this Paragraph shall, at a minimum, be capable of, and be used for, predicting:
 - a. Volume of wastewater flow in the force mains and the Major Gravity Lines;
 - b. Hydraulic pressure (psig) or hydraulic grade line ("HGL") of wastewater at any point in force mains and the Major Gravity Lines;
 - c. Flow capacity of each of the Pumping Stations in the Collection System;
 - d. Flow capacity of each Pumping Station with its back-up pump out-of-service;
 - e. Peak flows for each Pumping Station during storm events of a magnitude of up to 20years; and
 - f. Likelihood and location of overflow(s) within a service area under high flow conditions, including Pumping Station service areas where the Pumping Station's back-up pump is out-of-service, and considering available wet well capacity, off-line storage capacity, and normal in-line storage capacity.
- ii. The Model shall also be:
 - a. Configured based on representative, accurate and verified system attribute data (i.e., pipe sizes and invert elevations, manhole rim elevations, etc.);

- b. Calibrated using spatially and temporally representative rainfall data and flow data obtained under this Consent Decree pursuant to Paragraph 9.E.iii; and
- c. Verified using spatially and temporally representative rainfall data and flow data; that data shall be independent of the data used to calibrate the Model.

C. Model Project Approach Report:

i. Within one hundred and fifty (150) days from the Date of Entry of this Consent Decree, Baltimore shall submit to EPA and MDE for approval a report that sets forth a project approach and detailed schedule of development, installation and implementation of the Model for the Collection System (the "Project Approach Report"). The Project Approach Report shall include, at a minimum, the following information:

- a. Model's name and type;
- b. Model's specific attributes, characteristics and limitations;
- c. Base algorithms for each major computational function;
- d. Identification of all input parameters, constants, assumed values and expected outputs;
- e. Computer hardware required to run the Model;
- f. Computer hardware to be used; and
- g. A digital map that identifies and characterizes the portions of the Collection System that shall be included in the Model.

ii. The Project Approach Report required by this Paragraph 12.C shall also identify how the Model will be adapted to predict wastewater flows through the Collection System, including:

- a. Identification of specific types of input data that are to be used and how attribute data accuracy and representativeness will be assured;
- b. Configuration of the Model;
- c. Procedures and protocols for performance of sensitivity analyses (i.e., how the Model responds to changes in input parameters and variables);

- d. Procedures for calibrating the Model to account for values representative of the Collection System using actual system data (e.g., precipitation and flow data), which include measures to assure that calibration variables such as pipe friction factors, are kept within generally-accepted realistic ranges;
- e. Procedures for verification of the Model's performance using actual system data (e.g., precipitation and flow data); and
- f. Procedures and methodologies for the generation of wet weather hydrographs for each sewershed flow monitoring basin.

D. Within sixty (60) days of receipt of EPA's and MDE's final comments on the Model Project Approach Report required by Paragraph 12.C , Baltimore shall modify the report, consistent with EPA and MDE's final comments, and submit the Model Project Approach Report to EPA and MDE for final approval. Baltimore shall immediately begin to implement the Project Approach Report upon receipt of EPA and MDE's final approval. Upon final approval by EPA and MDE of the Project Approach Report shall be incorporated into, and become enforceable under this Consent Decree.

E. Model Certification: Baltimore shall complete implementation of the Model for each sewershed, on or before submission of the Sewershed Study and Plan required under Paragraph 9, and shall certify to EPA and MDE that:

- i. The Model includes the elements required by Paragraph 12.A and B to complete the work required by Paragraph 9.F; and
- ii. The Model has been calibrated (including the performance of sensitivity analyses) and verified in accordance with the Project Approach Report using actual system data (e.g., flow data) from permanent and temporary monitoring points in the Collection System.

Baltimore shall describe in a report to EPA and MDE, that shall be submitted together with the above-certification, the results of the Model calibration and verification.

F. Progress Report: Beginning thirty (30) days after the end of the first full calendar quarter following receipt of EPA and MDE's final approval of the Model Project Approach Report and thirty (30) days after the end of each calendar quarter thereafter until EPA and MDE's acceptance of Baltimore's certification of the Model, Baltimore shall submit to EPA and MDE a report setting forth the progress made by Baltimore during the previous calendar quarter.

13. Collection System Operation and Maintenance.

A. Baltimore shall implement a maintenance program for the Collection System, including its gravity sewer lines, force mains, Pumping Stations and other appurtenances (e.g., manholes, pressure sewers, inverted siphons, meter vaults), to provide for the proper operation and maintenance of equipment while minimizing failures, malfunctions, and line blockages due to the lack of adequate preventative care. The program shall include:

- i. Re-inspection of the Collection System consistent with the requirements of Paragraph 9.D;
- ii. Routine preventative maintenance of Pumping Stations as described in Paragraph 11.E;
- iii. Sealing (where appropriate), and maintenance, of manholes;
- iv. Identification and remediation of poor construction;
- v. Procedures for ensuring that new sewers and connections are properly designed and constructed (including testing of new sewer installations) to prevent overflows and to ensure that new connections of inflow sources are prohibited;
- vi. Procedures for ensuring that rehabilitation projects are properly designed and constructed (including testing of rehabilitation installations) to prevent overflows;
- vii. A grease control program that, at a minimum, maps identified grease blockages, notifies pretreatment staff of recurring grease blockages, requires the installation of grease traps and/or the implementation of a trap cleaning and inspection program, and a proposal that includes scheduled inspection of known problem areas;

- viii. A root control program that addresses, at minimum, scheduling and performing corrective measures including both short-term mitigation of root intrusion (i.e., routine maintenance) and rehabilitation of the areas in which root intrusion has caused recurring blockages (i.e., sewer replacement or relining), and a proposal that includes scheduled inspection of known problem areas;
- ix. Procedures for identification of all known locations where Baltimore does not have ready physical and legal access to the Collection System, the causes for lack of access, and its strategy for obtaining and maintaining access to such location;
- x. Description of method for documenting complaints, work orders, updates to equipment inventory, and changes to Collection System components, as well as entry of such data into databases comprising the information management system required under Paragraph 14; and
- xi. Corrective maintenance response and reporting procedures.

B. Within one hundred and twenty (120) days of the Date of Entry of this Consent Decree, Baltimore shall provide to EPA and MDE a report describing in detail the program required under Paragraph 13. Baltimore shall submit with the report copies of relevant forms, and product literature for all software, to be used as part of the maintenance program. Within thirty (30) days of receipt of EPA's and MDE's comments on the proposed operation and maintenance program, Baltimore shall modify the program accordingly, and submit the revised program to EPA and MDE for final approval. Upon receipt of EPA's and MDE's final approval of the operation and maintenance program, Baltimore shall implement the program, which shall be incorporated into, and become enforceable under this Consent Decree.

C. Baltimore shall fully implement the maintenance program required under this Paragraph 13 no later than eighteen (18) months from the date of EPA's and MDE's approval of such program as provided in Paragraph 13.B.

D. Progress Reports: After implementation of the maintenance program required under

Paragraph 13, Baltimore shall submit an annual report to EPA and MDE providing:

- i. A list of complaints related to the Collection System;
- ii. A list of completed work orders for the calendar year;
- iii. A list of outstanding work orders;
- iv. Current preventive maintenance schedules (task description, location, frequency), description of changes made to the schedules during the calendar year, and certification that the current schedules are being followed;
- v. A list of tests performed of new sewer installations and rehabilitations (location, date, description of new installation and/or rehabilitation);
- vi. An evaluation of the efficacy of the grease control program (summary of grease-related blockages identified, corrective action taken, preventive action taken, monthly rate of grease-related blockages and (if available) comparison of current and previous year performance, list of referrals to pretreatment staff, identification of remaining persistent and chronic blockage areas);
- vii. An evaluation of the efficacy of the root control program (summary of root-related blockages identified, corrective action taken, preventive action taken, monthly rate of root-related blockages and (if available) comparison of current and previous year performance, identification of remaining persistent and chronic blockage areas); and
- viii. An updated list of known locations where Baltimore does not have ready physical and/or legal access to the Collection System and the strategies Baltimore is employing to improve and secure such access to the Collection System.

14. Information Management System Program

A. Baltimore shall implement an information management system program to establish, update, and coordinate data systems used to collect information regarding the operation, maintenance and performance of the Collection System, including Collection System component inventory information, complaints, work orders, geographic data, and the status of work to be

implemented and completed under the Consent Decree. Baltimore shall design the information management system to assist Baltimore in analyzing data necessary to prepare the progress reports required under Paragraph 13.D and in mapping areas to be excepted from further inspections required by Paragraph 9.D.v.

B. Geographic Information System. As part of its information management system program Baltimore shall use a computerized geographic information system (“GIS”) to map the Collection System. The GIS shall be able to:

- i. Display all Collection System components;
- ii. Use embedded objects (or other alternative, equivalent methods) to link to schematic diagrams and attribute data (including inventory information) for Collection System components;
- iii. Display by color coding the portions of the Collection System that have been inspected and rehabilitated; and
- iv. Display the location(s) at which samples from flow meters and rain gauges have been collected for development of the model required under Paragraph 12.

Baltimore shall install all hardware and software necessary for the GIS system and ensure that the system is fully operational by no later than two (2) years from the Date of Entry of the Consent Decree.

At that time, Baltimore shall demonstrate to EPA and MDE that the GIS is fully functioning and capable of displaying the information described in Paragraph 14.B.i through iv, above. Baltimore shall complete the installation of the GIS System for a sewershed by no later than the date that the Sewershed Study and Plan for such sewershed is due under Paragraph 9.

C. 500 Scale Maps. Within ninety (90) days of the Date of Entry of this Consent Decree, Baltimore shall maintain at the Utilities Maintenance Division offices a complete set of 500 scale maps providing the location of sewers, manholes, meters, and other collection system appurtenances that include a means of cross referencing certain Collection System Components with component inventory data and component construction drawings.

D. Global Positioning System.

i. Within one hundred and twenty (120) days of the Date of Entry of this Consent Decree, Baltimore shall equip Utilities Maintenance Division crews with global positioning system (GPS) units enabling the crews to correct and/or update component information on the Collection System maps.

ii. Baltimore shall use the GPS units or other equivalent, alternative means to record location of sewer maintenance work related to the removal of tree roots and/or grease, and to record the location of new private sewer connections. Baltimore shall track and plot this information as part of its root and grease programs required by Paragraph 13.A, and its lateral rehabilitation programs required pursuant to Paragraph 10.

E. Inventory of Collection System Components: Within two (2) years of the Date of Entry of the Consent Decree, the inventory management system shall include an inventory of the Collection System components. At that time, Baltimore shall demonstrate to EPA and MDE that the inventory management system is fully functioning and capable of displaying the information identified in this Paragraph 14.E for each component. The inventory database shall store, for each component, a unique identification number and a corresponding data file that stores the following information:

- i. Identification number;
- ii. Capacity (e.g., for pipes: diameter, for valves: flow rate);
- iii. Date of installation;
- iv. Location of installation (address and/or latitude and longitude);
- v. Useful life and scheduled date for replacement;
- vi. Repair history;
- vii. Make and model, if applicable;
- viii. Type (e.g., material of construction, configuration of valve, etc.); and
- ix. Service status (i.e., whether or not component is in service).

F. Update Inventory of Collection System Components: Within ninety (90) days of completion of the inspection of a Collection System component required pursuant to Paragraph 9.D. Baltimore shall update the Collection System component inventory such that the updated inventory includes, for the inspected component, the information described in Paragraphs 14.E.i., ii., iv., v., vii., viii., and ix. Within ninety (90) days of completion of the rehabilitation of a Collection System component required pursuant to the terms of the Consent Decree, Baltimore shall update the Collection System inventory such that the updated inventory includes, for the rehabilitated component, the information listed in Paragraph 14.E.

G. Progress Reports:

Baltimore shall submit quarterly reports providing:

- i. Percent of system inventoried; and
- ii. Progress towards GIS implementation.

15. Valve Inspection and Repair Program

A. No later than one year from the Date of Entry of the Consent Decree, Baltimore shall conduct inspections and exercise all valves identified in Appendix H in service in the Collection System.

B. Baltimore shall inspect, or use other means to determine, whether each valve contains cracks, faults, or is otherwise damaged to such an extent that its function could be impaired.

C. Baltimore shall exercise each valve by operating it in the closed and open position.

D. No later than one year from the Date of Entry of the Consent Decree, Baltimore shall complete the repair or removal of any valve that contains cracks, faults, or is damaged to such an extent that its function could be impaired.

E. Progress Reports: Beginning thirty (30) days after the end of the first full calendar quarter following the completion of the work described in Paragraphs 15.A through 15.D, and thirty (30) days after the end of every calendar quarter thereafter, Baltimore shall certify and report to EPA and MDE the progress of the valve inspection and repair program. The progress report

shall:

- i. List each valve;
- ii. Identify the date of completion of the inspection of each valve;
- iii. Identify whether the valve is in need of repair;
- iv. Identify the date of completion of the repair of each valve;
- v. Describe the repair or other improvement taken or to be taken with respect to each valve for which Baltimore has identified a crack, fault, or other damage that could impair its function; and
- vi. Identify whether a valve has caused or contributed to an overflow condition during the calendar quarter.

16. Emergency Response Plan - Unpermitted Discharges

A. Baltimore shall develop and implement an Emergency Response Plan to adequately protect the health and welfare of persons in the event of the unpermitted discharge of pollutants from the Collection System to surface waters (including its storm water system).

B. Within thirty (30) days of the Date of Lodging of this Consent Decree, Baltimore shall provide to EPA and MDE for approval an Emergency Response Plan that addresses the actions to be taken by Baltimore in the event of the unpermitted discharge of pollutants from the wastewater treatment and collection system to surface waters. The Emergency Response Plan shall include but not be limited to:

- i. A detailed description of the actions Baltimore will undertake to immediately provide notice to the public (through the local news media and other means) of the unpermitted discharge of pollutants from the wastewater treatment and Collection System to surface waters, including a plan for notifying the public that such discharge has caused an adverse impact on water quality measured by turbidity, dissolved oxygen, fecal coliform, total coliform, or other bacteriological standards required by State law related to the discharge of domestic wastewater. For purposes

of Paragraphs 16 and 17, the phrase “adverse impact” shall mean any decrease in the levels of dissolved oxygen and any increase in the levels of the above-listed pollutants in the water body over background – i.e., the levels in the water body of such pollutants prior to, and immediately upstream of, the discharge.

- ii. A detailed description of the actions Baltimore will undertake to provide notice to EPA, the United States Coast Guard Service, MDE, local law enforcement authorities, state and local public health services, and other appropriate federal, state and local agencies;
- iii. A detailed plan (including the development of response standard operating procedures) to minimize the volume of untreated wastewater transmitted to the portion of the wastewater treatment and collection system impacted by the events precipitating the unpermitted discharge to surface waters and to minimize overflow volumes;
- iv. Identification of the personnel and resources who will be made available by Baltimore to correct or repair the condition causing or contributing to the unpermitted discharge to surface waters;
- v. A plan to ensure the preparedness, including responsiveness training of Baltimore employees, contractors, and personnel of other affected Baltimore agencies necessary for the effective implementation of the Emergency Response Plan in the event of an unpermitted discharge of wastewater to surface waters;
- vi. A detailed monitoring, sampling, analysis and reporting plan to determine if receiving water bodies have been adversely impacted by the discharge of wastewater associated with an overflow event and are meeting state and local water quality standards for, and are experiencing adverse impacts from, turbidity, dissolved oxygen, fecal coliform, total coliform, or other bacteriological standards required by State law related to the discharge of domestic wastewater. The plan

shall include, at a minimum, a program for the collection of overflow wastewater samples (5-day biochemical oxygen demand, fecal coliform, total suspended solids, entericocci, E-coli, turbidity, and dissolved oxygen) and surface water samples (which shall specify the frequency and duration of samples to be taken, the parameters to be sampled, and the location of such sampling events), a plan to perform laboratory analysis consistent with 40 C.F.R. Part 136, quality assurance/quality control procedures and protocols, and a plan for the reporting of all such data and information to EPA, MDE, and other appropriate federal, state and local agencies. At a minimum, the sampling and analysis of ambient samples collected under this Paragraph shall continue to be collected until Baltimore is able to demonstrate that background levels of the pollutants identified in this Paragraph are achieved. In addition to the sampling that Baltimore shall specify should be undertaken in accordance with the sampling plan to be approved under this Paragraph, EPA or MDE may request, and Baltimore shall conduct, additional sampling and analysis as deemed necessary to evaluate the impact of a discharge event.

- vii. A plan for the implementation of institutional controls and actions to advise the public of, and limit access to and contact with, waterways, ground surfaces and resources affected by the discharge of pollutants from the Baltimore's Collection System (Public Notification Plan). The geographic extent and duration of public access limitations shall be determined in consultation with MDE and appropriate State and local health organizations; and
- viii. Identification of overflow locations within the sewershed served by each Pumping Station and those locations at which a Sanitary Sewer Overflow is likely to occur first in the event of Pumping Station failure for each Pumping Station. The plan shall identify existing Pumping Station wet well capacity and any in-line storage

capacity. In addition, the annual updates to the plan shall reflect the findings of, and improvements made pursuant to the Sewershed Study and Plans required by Paragraph 9 of the Consent Decree. The Emergency Response plan shall include station-specific emergency procedures and bypass strategies and estimated storage capacity (i.e., maximum volume of sewage that can be stored in the event of a Pumping Station failure without causing a Sanitary Sewer Overflow and estimated time, at minimum, average, and maximum flow rates, during which sewage can be stored before a Sanitary Sewer Overflow will occur).

C. Within thirty (30) days of receipt of EPA and MDE's comments on the Emergency Response Plan for the unpermitted discharges, Baltimore shall modify the Emergency Response Plan accordingly and incorporate all such modifications into the Emergency Response Plan, and submit the Emergency Response Plan to EPA and MDE for final approval. Upon its approval by EPA and MDE, the Emergency Response Plan shall be incorporated into, and become enforceable under, this Consent Decree. Within thirty (30) days of EPA and MDE approval, Baltimore shall implement the plan. The Parties agree to meet and confer, as needed, to discuss the development and implementation of Baltimore's Emergency Response Plan.

D. Baltimore shall review the Emergency Response Plan on an annual basis and update such plan as necessary. Each annual update of the Emergency Response Plan shall be subject to EPA and MDE approval as specified in Paragraph B, above, and upon EPA and MDE approval shall be incorporated into, and become enforceable under, this Consent Decree. Baltimore shall maintain a copy of the Emergency Response Plan required by this Paragraph 16 at each of its Pumping Stations.

E. Any dispute with respect to any portion of the Emergency Response Plan required by this Paragraph shall not delay the development or implementation of the undisputed portions of the Emergency Response Plan.

17. Reporting of Discharge Events and Recordkeeping

A. Baltimore shall report to MDE by oral notification any unauthorized discharge of wastewater from the portions of the Collection System within the geographic boundaries of Baltimore to any waters of the United States and waters of the State of Maryland within twenty-four (24) hours of the time Baltimore first becomes aware of the unauthorized discharge. A written report shall also be provided to EPA and MDE within five (5) days of the time Baltimore first becomes aware of the unauthorized discharge. Any written report shall be made to Water Protection Division, United States Environmental Protection Agency, Region III and to the Compliance Program, Water Management Administration, MDE. The written report shall contain the following:

- i. The cause of the discharge;
- ii. Duration and volume (estimate if unknown);
- iii. Description of the source (e.g., manhole cover, Pumping Station);
- iv. Type of collection system that overflowed (i.e., combined or separate);
- v. Location by street address, or any other appropriate method (i.e., by latitude and longitude);
- vi. Date of event;
- vii. The ultimate destination of the flow (e.g., surface waterbody, land use location), via municipal separate storm sewer system to a surface waterbody (show location on a map);
- viii. Corrective actions or plans to eliminate future discharges; and
- ix. Whether or not the overflow has caused, or contributed to, an adverse impact on water quality in the receiving water body.

B. Baltimore shall develop a detailed monitoring, sampling, analysis and reporting plan to determine if receiving water bodies are meeting state and local water quality standards for, and are experiencing adverse impacts from, turbidity, dissolved oxygen, fecal coliform, total coliform,

entericocci, E-coli, or other bacteriological standards required by State law related to the discharge of domestic wastewater. Alternatively, Baltimore may demonstrate to EPA and MDE that existing data and information regarding ambient water quality for the above-referenced pollutants in surface water bodies that could be potentially impacted by discharges from the Collection System is adequate for determining if such water bodies have been adversely impacted by discharges from the Collection System.

C. Baltimore shall maintain records until termination of the Consent Decree of the following information for each Sanitary Sewer Overflow from the Collection System:

- i. The location of the overflow and receiving water, if any;
- ii. An estimate of the volume of the overflow;
- iii. A description of the sewer system component from which the overflow occurred (e.g., manhole, constructed overflow pipe, crack in pipe, etc.);
- iv. The estimated date and time when the overflow began and when it stopped;
- v. The cause or suspected cause of the overflow;
- vi. Response actions taken;
- vii. Steps that have been and will be taken to prevent the overflow from recurring and a schedule for those steps including:
 - a. work order records associated with investigation and repair of system problems related to sanitary sewer overflows; and
 - b. documentation of performance and implementation measures; and
- viii. A list and description of complaints from customers or others regarding overflows.

D. Baltimore shall maintain for five (5) years a copy of any written reports prepared pursuant to this Paragraph 17, above.

VII. REPORTING

18. Beginning with the first full calendar quarter after the Date of Entry of the Consent Decree, Baltimore shall submit to EPA and MDE within thirty (30) days after the end of each calendar quarter until termination of this Consent Decree a Calendar Quarterly Progress Report (“Calendar Quarterly Report”) covering the subject of this Consent Decree. This Calendar Quarterly Report shall contain, the following:

- i. Progress reports on the implementation of the requirements of Section VII (Remedial Measures) as described in Paragraphs 8 through 15;
- ii. A description of any problems anticipated with respect to meeting the requirements of Section VII (Remedial Measures) of this Consent Decree; and
- iii. A description of all environmentally beneficial projects and SEP implementation activity in accordance with Paragraph 29-33 of the Consent Decree; and
- iv. Any such additional matters as Baltimore believes should be brought to the attention of EPA and MDE.

The Calendar Quarterly Report shall be certified, consistent with the requirements of 40 C.F.R.

122.22(a)(3), by the person responsible for compliance or by a person responsible for overseeing implementation of this Consent Decree, which shall state:

I certify under penalty of law that this information was 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 directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

VIII. CIVIL PENALTY

19. Baltimore shall pay a civil penalty to the United States and the State of Maryland in the amount of six hundred thousand dollars (\$600,000) for violations as alleged by the United States in the Complaint and the State of Maryland in the Complaint in Intervention, and covering capacity- related overflows occurring during wet weather from the outfalls identified in Appendix D through

the "Construction Completion" milestone date for the project(s) associated with the elimination of Overflows from such outfalls. Baltimore shall pay fifty percent (50%) of the civil penalty to the United States within thirty (30) days after the Date of Entry of this Consent Decree in accordance with Paragraph 21, below. Baltimore shall pay fifty percent (50%) of the civil penalty to the State of Maryland within thirty (30) days after the Date of Entry of the Consent Decree in accordance with Paragraph 21, below.

20. The United States and the State of Maryland shall be deemed judgment creditors for purposes of collection of this penalty.

21. Payment of the civil penalty shall be made by Electronic Funds Transfer ("EFT") to the U.S. Department of Justice ("DOJ") lockbox bank, referencing DOJ No. 90-5-1-1-4402/1. Payment shall be made in accordance with instructions provided by the United States to Baltimore following execution of this Consent Decree. Any EFT received at the DOJ lockbox bank after 11:00 A.M. Eastern Time will be credited on the next business day. Notice of the EFT shall simultaneously be mailed to the following:

Docket Clerk (3RC00)
U.S. EPA - Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Joyce A. Howell (3EC00)
U.S. EPA - Region III
1650 Arch Street
Philadelphia, PA 19103-2029; and

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611
Reference DOJ Case No. 90-5-1-1-4402/1

The transmittal letter forwarding such notice shall include the caption, civil action number and judicial district of this action. Payments to the State of Maryland shall be made by tendering to the Maryland Department of the Environment, P.O. Box 2057, Baltimore, MD 21203-2057 checks

made payable to: “Maryland Clean Water Fund.”

22. If Baltimore fails to tender all or any portion of the civil penalty payment owed to the United States within thirty (30) days of the Date of Entry of this Consent Decree interest on the unpaid amount shall accrue in accordance with the provisions of 28 U.S.C. § 1961 and be paid from the date said payment is due until all amounts owed are paid.

IX. STIPULATED PENALTIES

23. Baltimore shall pay stipulated penalties to the United States and the State of Maryland as specified in this Paragraph 23 for its failure to comply with the requirements of Paragraphs 8 through 17 of the Consent Decree. Stipulated penalties due and owing under this Paragraph shall be paid in the manner specified in Paragraph 21 of the Consent Decree for the payment of the civil penalty and according to the percentage distribution specified in Paragraph 19.

Compliance Measures

A. Baltimore will pay stipulated penalties to the United States and the State of Maryland for each day it fails to meet any of the milestone dates identified in Appendix D for the construction projects identified therein, as required by Paragraph 8.B. The stipulated penalties collectively payable to the United States and the State of Maryland per day for each failure to meet each milestone date are as follows:

<u>Period of Noncompliance</u>	<u>Penalty per Milestone Date per Day of Violation</u>
1 st to 30 th day	\$ 1,000
31 st to 60 th day	\$ 2,500
After 60 days	\$ 6,000

B. Baltimore will pay stipulated penalties to the United States and the State of Maryland for each day it fails to meet the milestone dates identified in Paragraph 8.D for the elimination of Baltimore’s Combined Sewer System and Combined Sewer Overflows. The stipulated penalties collectively payable to the United States and the State of Maryland per day for each failure to meet each milestone date are as follows:

<u>Period of Noncompliance</u>	<u>Penalty per Milestone Date per Day of Violation</u>
1 st to 30 th day	\$ 1,000
31 st to 60 th day	\$ 2,500
After 60 days	\$ 6,000

C. Baltimore will pay stipulated penalties to the United States and the State of Maryland for its failure to complete any of the elements of the sewershed evaluations described in Paragraph 9.D. (“Collection System Inspections”), 9.E. (Infiltration and Inflow (“I/I”)), and 9.F. (“Long-Term Capacity/Peak Flow Management”). The stipulated penalties collectively payable to the United States and the State of Maryland per day for each failure to complete such an element are as follows:

<u>Period of Noncompliance</u>	<u>Penalty per Element per Day of Violation</u>
1 st to 30 th day	\$ 1,000
31 st to 60 th day	\$ 1,500
After 60 days	\$ 2,250

D. Baltimore will pay stipulated penalties to the United States and the State of Maryland for each day it fails to submit a complete Sewershed Study and Plan(s) as required by Paragraph 9.C by the milestone dates identified in Paragraph 9.B. The stipulated penalties collectively payable to the United States and the State of Maryland per day for each failure to meet each milestone date are as follows:

<u>Period of Noncompliance</u>	<u>Penalty per Element per Day of Violation</u>
1 st to 30 th day	\$ 1,000
31 st to 60 th day	\$ 1,500
After 60 days	\$ 2,250

E. Baltimore will pay stipulated penalties to the United States and the State of Maryland for each day it fails to implement and complete any approved Sewershed Study and Plan(s) as described therein, or fails to implement the projects described in Paragraph 9.C.ii, vi., and vii

according to the schedules proposed and approved pursuant to those paragraphs. The stipulated penalties collectively payable to the United States and the State of Maryland per day for failing to implement and complete any element of an approved Sewershed Study and Plan or to implement any project in accordance with an approved schedule are as follows:

<u>Period of Noncompliance</u>	<u>Penalty per Element per Day of Violation</u>
1 st to 30 th day	\$ 1,000
31 st to 60 th day	\$ 1,500
After 60 days	\$ 2,250

F. Baltimore will pay stipulated penalties to the United States and the State of Maryland for its failure to implement the illegal connections program as specified in Paragraph 10.A and 10.F. The stipulated penalties collectively payable to the United States and the State of Maryland per day for its failure to implement the program are as follows:

<u>Period of Noncompliance</u>	<u>Penalty per Element per Day of Violation</u>
1 st to 30 th day	\$ 1,000
31 st to 60 th day	\$ 1,500
After 60 days	\$ 2,250

G. Baltimore will pay stipulated penalties to the United States and the State of Maryland for each day it fails to meet any of the milestone dates identified in Paragraph 11.A for Pumping Station rehabilitation and repair projects. The stipulated penalties collectively payable to the United States and the State of Maryland per day for each failure to meet each milestone date are as follows:

<u>Period of Noncompliance</u>	<u>Penalty per Milestone Date per Day of Violation</u>
1 st to 30 th day	\$ 1,000
31 st to 60 th day	\$ 2,000
After 60 days	\$ 4,000

H. Baltimore will pay stipulated penalties to the United States and the State of Maryland

for its failure to implement and/or complete any of the elements of the Pumping Station program set forth in Paragraph 11.B (Pumping Station Inspection Procedures), 11.C (Pumping Station Remote Monitoring), 11.D (Pumping Station Equipment Inventory), 11.E (Pumping Station Preventative Maintenance), and 11.F (Pumping Station Operation and Maintenance Manuals). The stipulated penalties collectively payable to the United States and the State of Maryland per day for its failure to implement and/or complete any of the elements identified in this paragraph are as follows:

<u>Period of Noncompliance</u>	<u>Penalty per Element per Day of Violation</u>
1 st to 30 th day	\$ 1,000
31 st to 60 th day	\$ 1,500
After 60 days	\$ 2,250

I. Baltimore will pay stipulated penalties to the United States and the State of Maryland for its failure to implement and/or complete any of the elements of the Collection and Transmission System Model program set forth in Paragraph 12.A and provide the certification required by Paragraph 12.F. The stipulated penalties collectively payable to the United States and the State of Maryland per day for its failure to implement and/or complete any of the elements identified in this paragraph are as follows:

<u>Period of Noncompliance</u>	<u>Penalty per Element per Day of Violation</u>
1 st to 30 th day	\$ 1,000
31 st to 60 th day	\$ 1,500
After 60 days	\$ 2,250

J. Baltimore will pay stipulated penalties to the United States and the State of Maryland for its failure to implement and/or complete any of the elements of the Operation and Maintenance Program set forth in Paragraphs 13.A and 13.B, the Information Management System Program set forth in Paragraphs 14.A through 14.I, and the Valve Inspection and Repair Program set forth in Paragraph 15. The stipulated penalties collectively payable to the United States and the State of

Maryland per day for its failure to implement and/or complete any of the elements identified in this paragraph are as follows:

<u>Period of Noncompliance</u>	<u>Penalty per Element per Day of Violation</u>
1 st to 30 th day	\$ 1,000
31 st to 60 th day	\$ 1,500
After 60 days	\$ 2,250

Reports

K. Baltimore will pay stipulated penalties to the United States and the State of Maryland for each day it fails to submit the reports identified in this Paragraph by the milestone dates in the Consent Decree for the submittal of such reports: Baseline Information Report (8.C); Illegal Connection Reports (10.B and 10.C), Model Project Approach Report (12.B, 12.C, 12.D), Collection System Operation and Maintenance Report (13.B), and Progress Reports.

<u>Period of Noncompliance</u>	<u>Penalty per Day</u>
1 st to 60 th day	\$750
After 60 days	\$2,000

L. Baltimore will pay stipulated penalties to the United States and the State of Maryland for each day it fails to submit an Emergency Response Plan report (16.B) and Discharge Event Reports (17.A) by the dates required in the Consent Decree for the submittal of such reports. The stipulated penalties collectively payable to the United States and the State of Maryland per day for its failure to submit the reports identified in this Paragraph are \$3,000 per day.

M. Overflows: Baltimore will pay stipulated penalties to the United States and the State of Maryland for all Overflows in the amount set forth in this Paragraph, with the exception of capacity-related, wet weather Overflows from the constructed outfalls identified in Appendix D prior to the respective “Construction Completion” milestone date for the project(s) associated with the elimination of Overflows from such outfalls. To demonstrate that a capacity-related Overflow was caused by a wet weather event, Baltimore shall demonstrate with flow monitoring records or

other engineering data that wet weather conditions caused the Overflow. The stipulated penalties collectively payable to the United States and the State of Maryland per Overflow event are as follows:

Less than 100 gallons	\$100
100 to 2,499 gallons	\$500
2,500 to 9,999 gallons	\$1,000
10,000 to 99,999 gallons	\$3,750
100,000 to 999,999 gallons	\$10,000
1 million gallons or more	\$15,000

N. **Stipulated Penalty for the Supplemental Environmental Project:**

Baltimore will pay stipulated penalties to the United States and the State of Maryland for each day it fails to meet any of the design milestone dates identified in the Scope of Work set forth in Appendix I. The stipulated penalties collectively payable to the United States and the State of Maryland per day for each failure to meet each design milestone date are as follows:

<u>Period of Noncompliance</u>	<u>Penalty per Milestone Date per Day of Violation</u>
1 st to 30 th day	\$ 1,000
31 st to 60 th day	\$ 1,500
After 60 days	\$ 2,250

O. **Substantial Completion:** Baltimore may petition EPA and MDE to waive the assessment of stipulated penalties under Paragraphs 23.C, D, E, F, H, I, and J. Baltimore shall submit such petition prior to the compliance deadline provided in the paragraph to which the waiver is related and shall in its submission:

- i. notify EPA and MDE that all program elements or tasks required in that paragraph will not be completed before the deadline;
- ii. demonstrate to EPA and MDE that it has completed at least 95% of the program elements or tasks required in that paragraph; and
- iii. either propose an extended deadline for completion of the remaining program elements or tasks; or
- iv. identify any deficiencies that cannot be cured because no future opportunity exists for doing so.

EPA and MDE shall not disapprove a petition that meets the foregoing criteria but may establish a different reasonable deadline. Baltimore shall pay stipulated penalties to EPA and MDE for failure to meet the extended deadline.

24. If a date by which Baltimore must meet any obligation of this Consent Decree falls on a holiday or week-end, the due date shall be the following business day, with the exception of the obligations set forth in Paragraph 17 of this Consent Decree. Stipulated civil penalties shall automatically begin to accrue on the first day Baltimore fails to satisfy any obligation or requirement of this Consent Decree and shall continue to accrue until the violation or deficiency is corrected. Stipulated penalties shall continue to accrue throughout any dispute resolution process, except that stipulated penalties shall not accrue beginning thirty (30) days after Baltimore seeks judicial review of a dispute pursuant to the Dispute Resolution provisions of this Decree.

25. Payment of stipulated civil penalties as set forth above shall be in addition to any other rights or remedies which may be available to the United States and the State of Maryland or their agencies by reason of Baltimore's failure to comply with the requirements of this Consent Decree and all applicable federal, state or local laws, regulations, wastewater discharge permit(s) and all other applicable permits.

26. Stipulated civil penalties shall be paid no later than thirty (30) days following the first day in which EPA and MDE send to Baltimore a demand for payment of the stipulated penalties

which have accrued to date together with an explanation for the basis(es) for the demand. Payment of stipulated civil penalties shall be paid as provided in Paragraphs 19-21.

27. In the event that a stipulated civil penalty is not paid when due, the stipulated civil penalty owed to the United States shall be payable with interest from the original due date to the date of payment at the statutory judgment rate set forth at 28 U.S.C. § 1961(a).

28. EPA and MDE may, in their sole and unreviewable discretion, waive any stipulated penalties that have accrued against Baltimore pursuant to this Consent Decree.

X. SUPPLEMENTAL ENVIRONMENTAL PROJECT

29. Baltimore shall complete the following Supplemental Environmental Project (“SEP”), which the parties agree is intended to secure significant environmental protection and improvements which are not otherwise required by law.

30. Baltimore shall complete the SEP pursuant to the work plans and the time schedules described in the Scope of Work (herein after “Scope of Work”), attached hereto as Appendix I and incorporated herein by reference.

31. Baltimore shall expend at least \$2.72 million for the SEP identified in Appendix I and complete the SEP in accordance with the schedule and specifications set forth in Appendix I and any scope of work. Baltimore shall include documentation of expenditures made in connection with the SEPs as part of the SEP Completion Report.

32. **Progress Reports**: Baltimore shall submit written quarterly reports to EPA and MDE according to the timetable set forth in Appendix I, which at a minimum describe:

a) Actions which have been taken toward achieving compliance with this Section of the Consent Decree during the previous calendar quarter; b) Actions to be taken toward achieving compliance with this Section of the Consent Decree during the next calendar quarter; c) Problems encountered and actual delays in the work and any actions taken or to be taken to prevent future delays; and d) Itemized accounting of costs expended for each SEP during the quarter. The first progress report shall be due the first full calendar quarter following the date of project initiation as set forth in

Appendix I. All other quarterly reports shall be due as set forth in Appendix I.

33. Baltimore shall submit a SEP Completion Report to EPA and MDE upon completion of the SEP described in Appendix I. The Report shall contain the following information for the SEP: (a) a detailed description of the SEP implemented; (b) a description of any operating problems encountered and the solutions thereto; (c) itemized costs; (d) certification pursuant to Section VII (Reporting) that the SEP have been fully implemented pursuant to the terms of this Consent Decree; and (e) a description of the environmental and public health benefits which are anticipated to result from implementation of the SEP.

XI. EFFECT OF SETTLEMENT

34. Effective upon the Date of Entry of the Consent Decree, and in consideration of the civil penalty payments that will be made, and the injunctive relief and supplemental environmental projects that will be performed by Baltimore under the terms of this Consent Decree, except as expressly set forth in Paragraph 35 (Reservation of Rights), the United States covenants not to bring any administrative or civil judicial action for violations of Sections 301 and 402 of the Clean Water Act as alleged in the Complaint filed in this matter, and the State of Maryland covenants not to sue Baltimore for violations of Sections 301 and 402 of the Clean Water Act and Sections 9-322 and 9-323 of the Maryland Environment Article as alleged in the State of Maryland's complaint in intervention. Entry of the Consent Decree by the Court shall resolve the United States and the State of Maryland's civil claims, except as expressly set forth in Paragraph 35 (Reservation of Rights), for violations of the above-referenced statutory provisions as alleged in the Complaint and in the Complaint in Intervention up to and including the Date of Lodging of the Consent Decree.

35. **Reservations of Rights.** Notwithstanding any other provision of this Consent Decree, the United States and the State of Maryland reserve, and this Consent Decree is without prejudice to, all rights against Baltimore with respect to all matters other than those expressly included in the Complaint including the following:

A. Claims based on a failure by Baltimore to meet a requirement of this Consent

Decree;

- B. Claims for stipulated penalties, if any, under the terms of this Consent Decree;
- C. Any criminal liability; and
- D. Claims that a discharge or overflow from the Collection System may pose an imminent and substantial endangerment to health or the environment in accordance with Section 504 of the Clean Water Act, 33 U.S.C. § 504.

XII. FORCE MAJEURE

36. "Force majeure" for the purposes of this Consent Decree is defined as an event arising from causes beyond the control of Baltimore or the control of any entity controlled by Baltimore, including its agents, consultants and contractors, which delays or prevents the performance of any obligation under this Consent Decree. Unanticipated or increased costs or expenses associated with implementation of this Consent Decree and changed financial circumstances shall not, in any event, be considered force majeure events. In addition, failure to apply for a required permit or approval or to provide in a timely manner all information required to obtain a permit or approval that is necessary to meet the requirements of this Consent Decree, or failure of Baltimore to approve contracts, shall not, in any event, be considered force majeure events.

37. When Baltimore knows or if Baltimore should have known, by the exercise of due diligence, of an event that might delay completion of any requirement of this Consent Decree, whether or not the event is a force majeure event, Baltimore shall notify EPA and MDE, in writing, within thirty (30) days after Baltimore first knew, or in the exercise of reasonable diligence under the circumstances, should have known of such event. The notice shall indicate whether Baltimore claims that the delay should be excused due to a force majeure event. The notice shall describe in detail the basis for Baltimore's contention that it experienced a force majeure delay, the anticipated length of the delay, the precise cause or causes of the delay, the measures taken or to be taken to prevent or minimize the delay, and the timetable by which those measures will be implemented. Baltimore shall adopt all reasonable measures to avoid or minimize such delay. Failure to so

notify EPA and MDE shall render this Section void and of no effect as to the event in question, and shall be a waiver of Baltimore's right to obtain an extension of time for its obligations based on such event.

38. If EPA and MDE find that a delay in performance is, or was, caused by a force majeure event, it shall extend the time for performance, in writing, for a period to compensate for the delay resulting from such event and stipulated penalties shall not be due for such period. In proceedings on any dispute regarding a delay in performance, the dispute resolution provisions of Section XIV (Dispute Resolution) shall apply, and Baltimore shall have the burden of proving that the delay is, or was, caused by a force majeure event, and that the amount of additional time requested is necessary to compensate for that event.

39. An extension of one compliance date based on a particular event shall not automatically extend any other compliance date. Baltimore shall make an individual showing of proof regarding the cause of each delayed incremental step or other requirement for which an extension is sought.

XIII. RETENTION OF JURISDICTION

40. This Court shall retain jurisdiction of this matter for the purposes of implementing and enforcing the terms and conditions of this Consent Decree and for the purpose of adjudicating all disputes among the Parties that may arise under the provisions of this Consent Decree, to the extent that this Consent Decree provides for resolution of disputes by the Court.

XIV. DISPUTE RESOLUTION

41. 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. However, the procedures set forth in this Section shall not apply to actions by the United States and the State of Maryland to enforce obligations of Baltimore that have not been disputed in accordance with this Section.

42. Any dispute which arises under or with respect to this Consent Decree shall in the first

instance be the subject of informal negotiations between Baltimore, EPA and MDE. The period for informal negotiations shall not exceed twenty (20) days from the time the dispute arises, unless it is modified by written agreement of Baltimore, EPA and MDE. The dispute shall be considered to have arisen when one party sends the other Parties a written Notice of Dispute.

43. If either Baltimore on the one hand, or EPA or MDE on the other hand, believes it has a dispute with respect to this Consent Decree with the other party it shall, within fourteen (14) days of the circumstances giving rise to the dispute, serve upon the other party a notice, in writing, setting forth the matter(s) in dispute. The Parties shall then attempt to resolve such dispute through informal negotiations. If the dispute cannot be resolved by the Parties within twenty (20) days from receipt of such notice, Baltimore shall comply with the position of the EPA and MDE unless, within forty-five (45) days of receipt of such notice of dispute, Baltimore invokes the formal dispute resolution procedures of this Section by serving on EPA and MDE a written Statement of Position. Baltimore's Statement of Position shall set forth the nature of the dispute with a proposal for its resolution as well as any factual data, analysis or opinion supporting that position and any supporting documentation relied upon. EPA and MDE may, within thirty (30) days of receipt of this petition, serve upon Baltimore their Joint Statement of Position with an alternative proposal for resolution as well as any factual data, analysis, or opinion supporting that position and all supporting documentation relied upon by EPA and MDE. In any such dispute invoked by Baltimore, Baltimore shall have the burden of proof. Within twenty (20) days after receipt of EPA's and MDE's Joint Statement of Position, Baltimore may serve a Reply upon EPA and MDE.

44. Following the EPA's and MDE's receipt of Baltimore's Statement of Position submitted pursuant to Paragraph 43, any Joint Statement of Position by EPA and MDE, and any Reply by Baltimore, EPA and MDE, will issue a Joint Final Decision resolving the dispute. EPA and MDE will use reasonable efforts to issue a Joint Final Decision no later than sixty (60) days after receipt of Baltimore's Reply. Failure by EPA and MDE to issue a Joint Final Decision within the sixty (60) days specified above shall not be interpreted to mean that EPA and MDE have

adopted Baltimore's position in the subject of the dispute. EPA's and MDE's Joint Final Decision shall be binding on Baltimore unless, within twenty (20) days of receipt of the decision, Baltimore files with the Court and serves on EPA and MDE, a motion for judicial review of the decision setting forth the matter in dispute, the efforts made by the Parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of the Consent Decree. The United States on behalf of EPA and MDE may file a response to Baltimore's motion.

45. All documents required by this Section to be served upon either party shall be served upon the addressees and in the manner identified in Paragraph 68 (Notice).

46. Submission of any matter to the Court for resolution shall not extend any of the deadlines set forth in this Consent Decree unless the Parties agree to such extension in writing or the Court grants an order extending such deadline. Stipulated penalties with respect to the disputed matter shall continue to accrue but payment shall be stayed pending resolution of the dispute as provided in Paragraph 44. Notwithstanding the stay of payment, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this Consent Decree. In the event that Baltimore does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section IX (Stipulated Penalties).

XV. RIGHT OF ENTRY

47. EPA and MDE, together with their authorized representatives and contractors shall each have authority at all times, upon the presentation of credentials, to enter the premises of Baltimore to:

- A. Monitor the progress of activities required by this Consent Decree;
- B. Verify any data or information submitted to the United States;
- C. Obtain samples, and, upon request, obtain splits of any samples collected by Baltimore or its consultants and contractors;
- D. Observe performance tests;

- E. Inspect and evaluate any portion of the Collection System; and
- F. Inspect and review any record required to be kept under the terms and conditions of this Consent Decree.

These inspection rights are in addition to, and in no way limit or otherwise affect, the EPA and MDE's statutory authorities to conduct inspections, to require monitoring and to obtain information from Baltimore as authorized by law.

XVI. NOT A PERMIT/COMPLIANCE WITH OTHER STATUTES/REGULATIONS

48. This Consent Decree is not and shall not be construed as a permit issued pursuant to Section 402 of the Clean Water Act, 33 U.S.C. § 1342, nor as a modification of any existing permit so issued, nor shall it in any way relieve Baltimore of its obligations to obtain a permit for its POTWs, the Collection System or any other part of its sewage treatment and collection system or facilities, and to comply with the requirements of any NPDES permit or with any other applicable federal or state law or regulation. Baltimore must comply with any new permit, or modification of existing permits in accordance with applicable federal and state laws and regulations.

49. Nothing herein shall be construed as relieving Baltimore of the duty to comply with the Clean Water Act, the Maryland water pollution control laws, the regulations promulgated under those acts, and all applicable permits issued under those acts and regulations.

XVII. FAILURE OF COMPLIANCE

50. The United States and State of Maryland, do not, by their consent to the entry of this Consent Decree, warrant or aver in any manner that Baltimore's complete compliance with this Consent Decree will result in compliance with the provisions of the Clean Water Act, 33 U.S.C. §§ 1251 et seq. or with Baltimore's NPDES permits. Notwithstanding EPA and MDE's review or approval of any plans, reports, policies, or procedures formulated pursuant to this Consent Decree, Baltimore shall remain solely responsible for any non-compliance with the terms of this Consent Decree, all applicable permits, the Clean Water Act and regulations promulgated under that Act. The pendency or outcome of any proceeding concerning issuance, reissuance, or modification of

any permit shall neither affect nor postpone Baltimore's duties and obligations as set forth in this Consent Decree.

51. Baltimore agrees that it may not assert as a defense to a claim that it is non-compliant with, or in violation of, the Consent Decree, that it has been unable to hire or retain qualified staff.

52. The Parties agree that from time-to-time they shall consult and meet regarding progress made under the Consent Decree. Nothing in this Consent Decree shall prevent Baltimore from seeking, or EPA and MDE from approving, interim recommendations made by the City that relate to approvals to be obtained under the Consent Decree.

53. **Commercial Unavailability:** Baltimore shall be solely responsible for compliance with any deadline or the performance of any work as described in Section VII (Remedial Measures) of this Consent Decree that requires the acquisition and installation of equipment or contracting with a vendor. If it appears that the commercial unavailability of equipment or vendor may delay Baltimore's performance of work according to an applicable implementation schedule, Baltimore shall notify EPA and MDE in accordance with the requirements of Section XIV (Dispute Resolution) of any such delays as soon as Baltimore reasonably concludes that the delay could affect its ability to comply with the implementation schedules set forth in this Consent Decree. Baltimore shall propose a modification to the applicable schedule of implementation. Prior to the notice required by this Paragraph 53, Baltimore must have undertaken reasonable efforts to obtain such a equipment and/or contacted a reasonable number of vendors and obtained a written representation that the equipment(s) and/or the vendor(s) are in fact commercially unavailable. In the notice, Baltimore shall reference this Paragraph 53 of this Consent Decree, identify the milestone date(s) it contends it will not be able to meet, provide EPA and MDE with written correspondence to the vendor identifying efforts made to secure the equipment and/or services of the vendor, and describe the specific efforts Baltimore has taken and will continue to take to find such equipment or vendor. Baltimore may propose a modified schedule or modification of other requirements of this Consent Decree to address such commercial

unavailability. Section XIV (Dispute Resolution) shall govern the resolution of any claim of commercial unavailability. EPA and MDE shall not unreasonably withhold its consent to requests for modifications of schedules of implementation if the requirements of this Paragraph are met. The failure by Baltimore to secure control equipment and vendor shall not constitute a force majeure event triggering the requirements of Section XIII (Force Majeure); this Paragraph shall apply.

XVIII. NON-WAIVER PROVISIONS

54. This Consent Decree in no way affects or relieves Baltimore of any responsibility to comply with any federal, state or local law or regulation.

55. The Parties agree that Baltimore is responsible for achieving and maintaining complete compliance with all applicable federal and state laws, regulations, and permits, and that compliance with this Consent Decree shall be no defense to any actions commenced pursuant to said laws, regulations, or permits, except as otherwise expressly specified in the Consent Decree.

56. The United States and MDE reserve any and all legal and equitable remedies available to enforce the provisions of this Consent Decree.

57. This Consent Decree shall not limit any authority of EPA and MDE under the Clean Water Act or any applicable statute, including the authority to seek information from Baltimore or to seek access to the property of Baltimore.

58. Performance of the terms of this Consent Decree by Baltimore is not conditioned on the receipt of any federal, state or local funds. Application for construction grants, state revolving loan funds, or any other grants or loans, or delays caused by inadequate facility planning or plans and specifications on the part of Baltimore shall not be cause for extension of any required compliance date in this Consent Decree.

59. It is the intent of the Parties hereto that the clauses hereof are severable, and should any clause(s) be declared by a court of competent jurisdiction to be invalid and unenforceable, the remaining clauses shall remain in full force and effect.

60. The United States reserves all remedies available to it for violations of the Clean Water Act by Baltimore that are not alleged in the Complaint and for violations of the Clean Water Act by Baltimore that occur after the Date of Lodging of this Consent Decree. The State of Maryland reserves all remedies available to it for violations of the Clean Water Act and the State water pollution control laws by Baltimore that are not alleged in the Complaint in Intervention and for violations of the Clean Water Act and the State water pollution control laws by Baltimore that occur after the Date of Lodging of this Consent Decree.

61. This Consent Decree does not resolve criminal liability, if any, that any person might have for violations of the Clean Water Act.

62. The Complaint, the Complaint in Intervention, and this Consent Decree shall constitute and establish diligent prosecution by the United States and the State of Maryland, under Section 505(b)(1)(B) of the Clean Water Act, 33 U.S.C. § 1365(b)(1)(B), and any other applicable federal or state law, of all matters alleged in the Complaint and in the Complaint in Intervention arising from the beginning of the applicable statutes of limitation through the Date of Lodging of the Consent Decree.

63. Execution of this Consent Decree does not preclude Baltimore from asserting any legal or factual position in any action brought against Baltimore by any person or entity not a party to the Consent Decree.

64. Nothing in this Consent Decree shall be construed to limit the authority of the United States or the State of Maryland to undertake any action against any person, including Baltimore, in response to conditions that may present an imminent and substantial endangerment to the environment or to the public health or welfare.

XIX. COSTS OF SUIT

65. Each party shall bear its own costs and attorney's fees with respect to matters resolved by this Consent Decree.

XX. RECORD KEEPING

66. A. Baltimore shall maintain copies of any reports, plans, permits and documents submitted to EPA and MDE pursuant to this Consent Decree, including any underlying research and data, for a period of five (5) years from date of submission. Baltimore shall require any independent contractor operating any portion of the Collection System or implementing any portion of this Consent Decree to also retain such materials for a period of five (5) years from date of submission.

B. In addition to the reports and documentation required to be provided by Baltimore under the terms of this Consent Decree, Baltimore shall also provide, upon demand, any analytical data or any other documents requested by the United States or State of Maryland to review work done, or to be done, by Baltimore or to determine Baltimore's compliance with the terms of this Consent Decree.

67. Baltimore shall notify EPA and MDE thirty (30) days prior to the disposal or destruction of such records at the end of this five year period and shall, upon EPA and MDE's request, make such records available to EPA and MDE prior to such disposal or destruction.

XXI. FORM OF NOTICE

68. 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:

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
1425 New York Avenue, N.W.
Washington, D.C. 20005

Reference DOJ Case No. 90-5-1-1-4402/1

As to EPA:

Joyce A. Howell (3RC20) (Cover letter only)
Senior Assistant Regional Counsel
United States Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103

Angela McFadden (3WP31)
Water Protection Division
United States Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103

As to State of Maryland:

Principal Counsel
Maryland Department of the Environment
Office of the Attorney General
2500 Broening Highway
Baltimore, MD 21224

Chief
Enforcement Division, Compliance Program
Water Management Administration
Maryland Department of Environment
2500 Broening Highway
Baltimore, MD 21224

As to Baltimore:

Director of Public Works
600 Abel Wolman Municipal Building
200 North Holliday Street
Baltimore, MD 21202

City Solicitor
City Hall
100 North Holliday Street
Baltimore, MD 21202

Notifications to or communications with EPA, MDE and the United States Department of Justice ("DOJ") shall be deemed submitted on the date they are posted.

XXII. MODIFICATION

69. This Consent Decree contains the entire agreement of the Parties. Prior drafts of the Consent Decree shall not be used in any action involving the interpretation or enforcement of the Consent Decree. With the exception of modifications pertaining to scheduling and other matters deemed minor by written mutual agreement of EPA, MDE and Baltimore, any modification of this Consent Decree by the Parties shall be in writing and filed with the Court before it will be deemed effective. Any unilateral attempt by a party to seek modification of the terms of the Consent Decree shall be subject to and consistent with the dispute resolution requirements in Section XIV (Dispute Resolution). Nothing in this Consent Decree shall be interpreted as modifying the scope and standard of review that the Court will exercise in reviewing a petition for modification.

XXIII. PUBLIC COMMENT AND ENTRY OF CONSENT DECREE

70. The Parties agree and acknowledge that final approval by the United States and entry of this Consent Decree is subject to the requirements of 28 C.F.R. § 50.7, which provides for notice of the lodging of this Consent Decree in the Federal Register, an opportunity for public comment, and consideration by the United States of any comments. This Paragraph does not create any rights exercisable by Baltimore.

XXIV. TERMINATION

71. The Consent Decree shall automatically terminate one year after Baltimore has certified to the United States, the State of Maryland and the Court that Baltimore has complied with all of its obligations under this Consent Decree.

72. The Consent Decree shall not terminate if, following certification by Baltimore of compliance pursuant to Paragraph 71 above, the United States and State of Maryland assert in writing that full compliance has not been achieved. If the United States and State of Maryland dispute Baltimore's full compliance, this Consent Decree shall remain in effect pending resolution of the dispute by the Parties or the Court in accordance with the Dispute Resolution provisions of this Decree.

XXV. SIGNATORIES

73. The Assistant Attorney General on behalf of the United States and the undersigned representatives of the Mayor and City Council of Baltimore and the State of Maryland certify that they are fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind such party to this document.


Dated and entered this _____ day of _____ 2002.

United States District Judge


WE HEREBY CONSENT to the entry of the Consent Decree in the United States v. Mayor and City Council of Baltimore, Civil Action No. _____, subject to the public notice and comment requirements of 28 C.F.R. § 50.7.

FOR PLAINTIFF, THE UNITED STATES OF AMERICA:

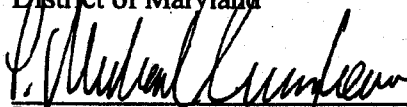
DATE: 4.23.02


THOMAS L. SANSONETTI
Assistant Attorney General
Environment and Natural Resources Division
United States Department of Justice

DATE: 4-24-02


ADAM M. KUSHNER
Senior Counsel
Environmental Enforcement Section
Environment and Natural Resources Division
United States Department of Justice
1425 New York Avenue, N.W.
Washington, DC 20003
(202) 514-4046

DATE: 4-15-02

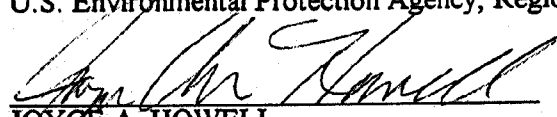
United States Attorney
District of Maryland

P. MICHAEL CUNNINGHAM
Assistant United States Attorney
District of Maryland
604 U.S. Courthouse
101 West Lombard Street
Baltimore, Maryland 21201
(410) 209-4881

DATE: 4/24/02



WILLIAM C. EARLY
Regional Counsel
U.S. Environmental Protection Agency, Region III

DATE: 4/24/02



JOYCE A. HOWELL
Senior Assistant Regional Counsel
U.S. Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, PA 19103
(215) 814-2644

DATE:

SYLVIA K. LOWRANCE
Acting Assistant Administrator
Office of Enforcement and Compliance Assurance
United States Environmental Protection Agency
Washington, D.C. 20460

WE HEREBY CONSENT to the entry of the Consent Decree in the United States v. Mayor and City Council of Baltimore, Civil Action No. _____, subject to the public notice and comment requirements of 28 C.F.R. § 50.7.


DATE:

DONALD S. WELSH
Regional Administrator
U.S. Environmental Protection Agency, Region III

DATE:

JOYCE A. HOWELL
Senior Assistant Regional Counsel
U.S. Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, PA 19103
(215) 814-2644

DATE: 4/23/2002

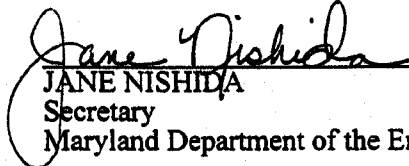


SYLVIA K. LOWRANCE
Principal Deputy Assistant Administrator
Office of Enforcement and Compliance Assurance
United States Environmental Protection Agency
Washington, D.C. 20460

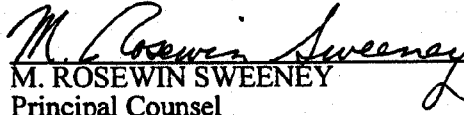
WE HEREBY CONSENT to the entry of the Consent Decree in the United States v. Mayor and City Council of Baltimore, Civil Action No. _____, subject to the public notice and comment requirements of 28 C.F.R. § 50.7.

FOR PLAINTIFF, THE STATE OF MARYLAND:


DATE: 4/24/02


JANE NISHIDA
Secretary
Maryland Department of the Environment

DATE: 4/24/02


M. ROSEWIN SWEENEY
Principal Counsel
Maryland Department of the Environment


DATE: 4/24/02


JENNIFER L. WAZENSKI
Assistant Attorney General
Maryland Department of the Environment
2500 Broening Highway
Baltimore, Maryland 21224
(410) 631-3058

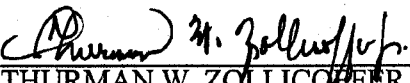
WE HEREBY CONSENT to the entry of the Consent Decree in the United States v. Mayor
and City Council of Baltimore, Civil Action No. _____, subject to the public notice and comment
requirements of 28 C.F.R. § 50.7.

FOR DEFENDANT, THE MAYOR AND CITY COUNCIL OF BALTIMORE:

DATE: April 24, 2002


MARTIN O'MALLEY
Mayor, City of Baltimore

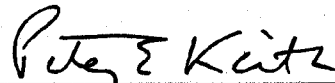
DATE: April 24, 2002


THURMAN W. ZOLLICOFFER, JR.
City Solicitor
City of Baltimore

DATE: April 24, 2002

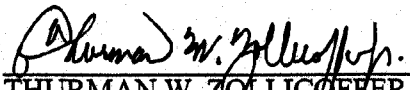

GEORGE L. WINFIELD
Director of Public Works

DATE: April 24, 2002


PETER KEITH, ESQ.
Special Counsel to Mayor and City
Council of Baltimore
Gallagher, Evelius and Jones
218 North Charles Street, #400
Baltimore, MD 21201
(410) 727-7702

APPROVED FOR FORM AND LEGAL SUFFICIENCY

DATE: April 24, 2002


THURMAN W. ZOLLICOFFER, JR.
City Solicitor

LIST OF APPENDICES

Appendix A	Combined Sewer Overflow Structures
Appendix B	Map of Baltimore's Combined Sewer System
Appendix C	Sanitary Sewer Overflow Structures
Appendix D	Construction Projects for Jones Falls, Herring Run, and Gwynns Falls sewersheds, and the Gwynns Run portion of the High Level sewershed,
Appendix E	Pumping Station Rehabilitation and Repair Projects
Appendix F	Pumping Station Inspection Checklist
Appendix G	Pumping Station Repair Priority Ranking System
Appendix H	Wastewater Collection System Valves
Appendix I	Biological Nutrient Reduction Supplemental Environmental Project

APPENDIX A COMBINED SEWER OVERFLOW STRUCTURES

Number	Manhole Location	Receiving Waters	City Grid Map		Type	Treatment Plant	Appendix D Project(s) to Eliminate
			Sheet	Plat Number			
10P	Front 4508 Wentworth Road	CSO Gwynns Falls	6	2WW	DWI	Patapsco	22
11P	West of Hillisdale Road at California Boulevard	CSO Gwynns Falls	6	2WW	DWI	Patapsco	22
13P	NE corner Purnell Drive and Forest Park Avenue	CSO Gwynns Falls	6	6QQ	DWI / CSO	Patapsco	22
18P	Rear 4017 Liberty Heights Avenue	CSO Gwynns Falls	6	3YY	DWI	Patapsco	22
19P	Granada Avenue Alley south of Main Avenue	CSO Gwynns Falls	6	3YY	DWI	Patapsco	22
21P	North of Winterbourne Avenue, east of Chelsea Terrace	CSO Gwynns Falls	6	7II	DWI / CSO	Patapsco	22
27P	Mohawk Path between Liberty and Kathland	CSO Gwynns Falls	6	1YY	DDSW	Patapsco	21
31P	Rear 4310 Kathland Avenue	CSO Gwynns Falls	6	1YY	DWI	Patapsco	22

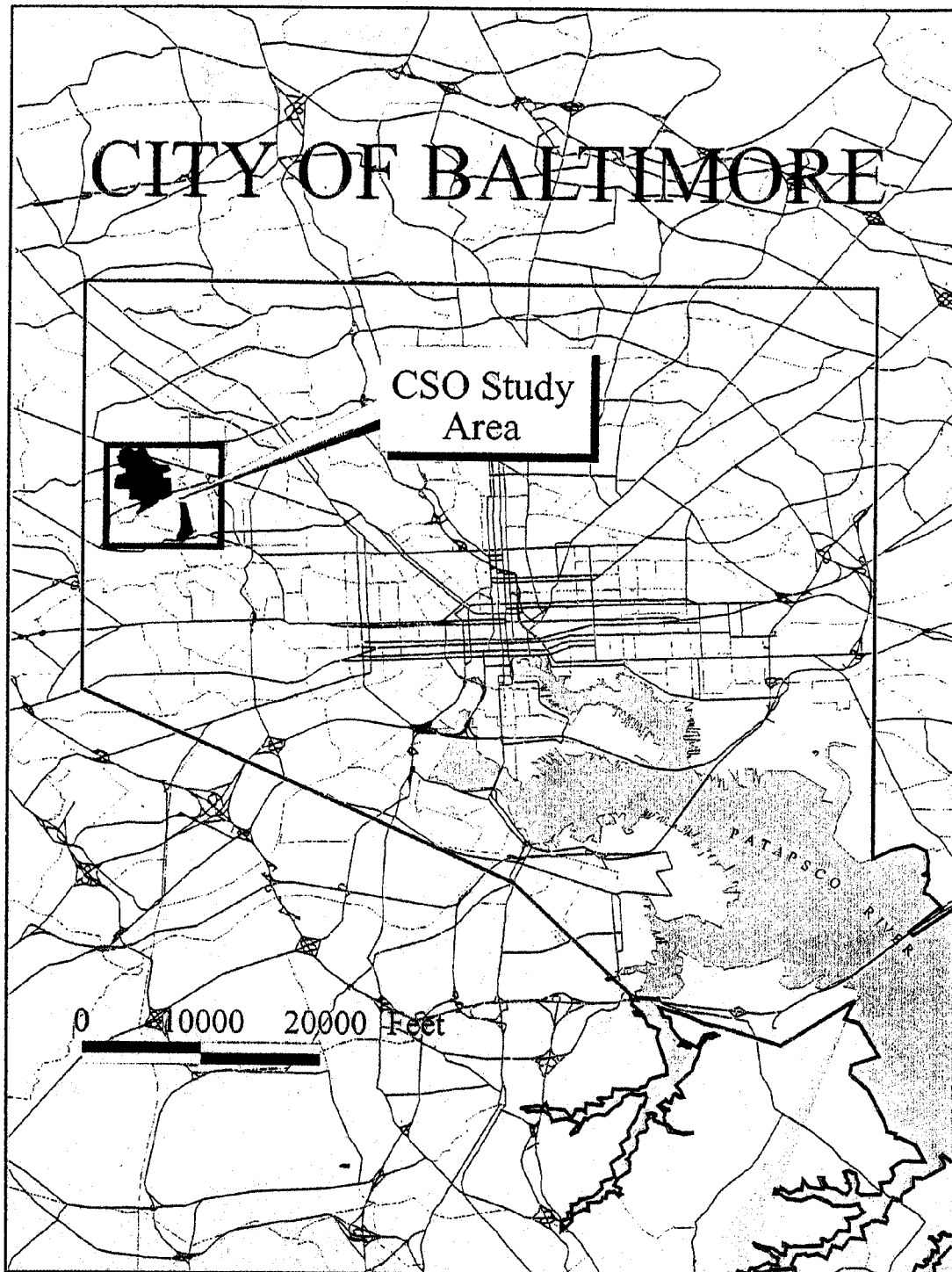
Abbreviations:

CSO - Combined Sewer Overflow

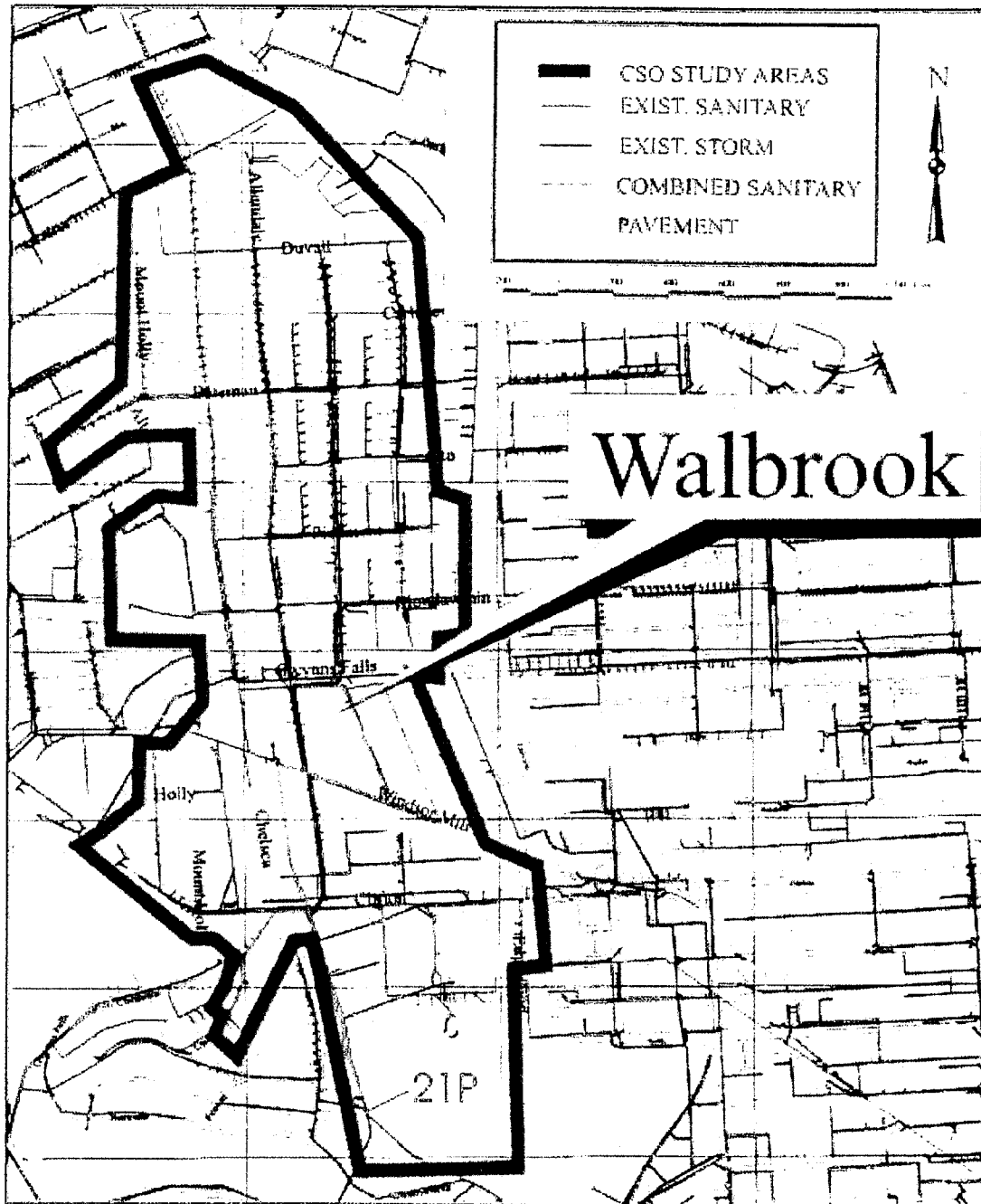
DDSW - Direct Discharge to Stormwater

DWI - Dry Weather Interceptor

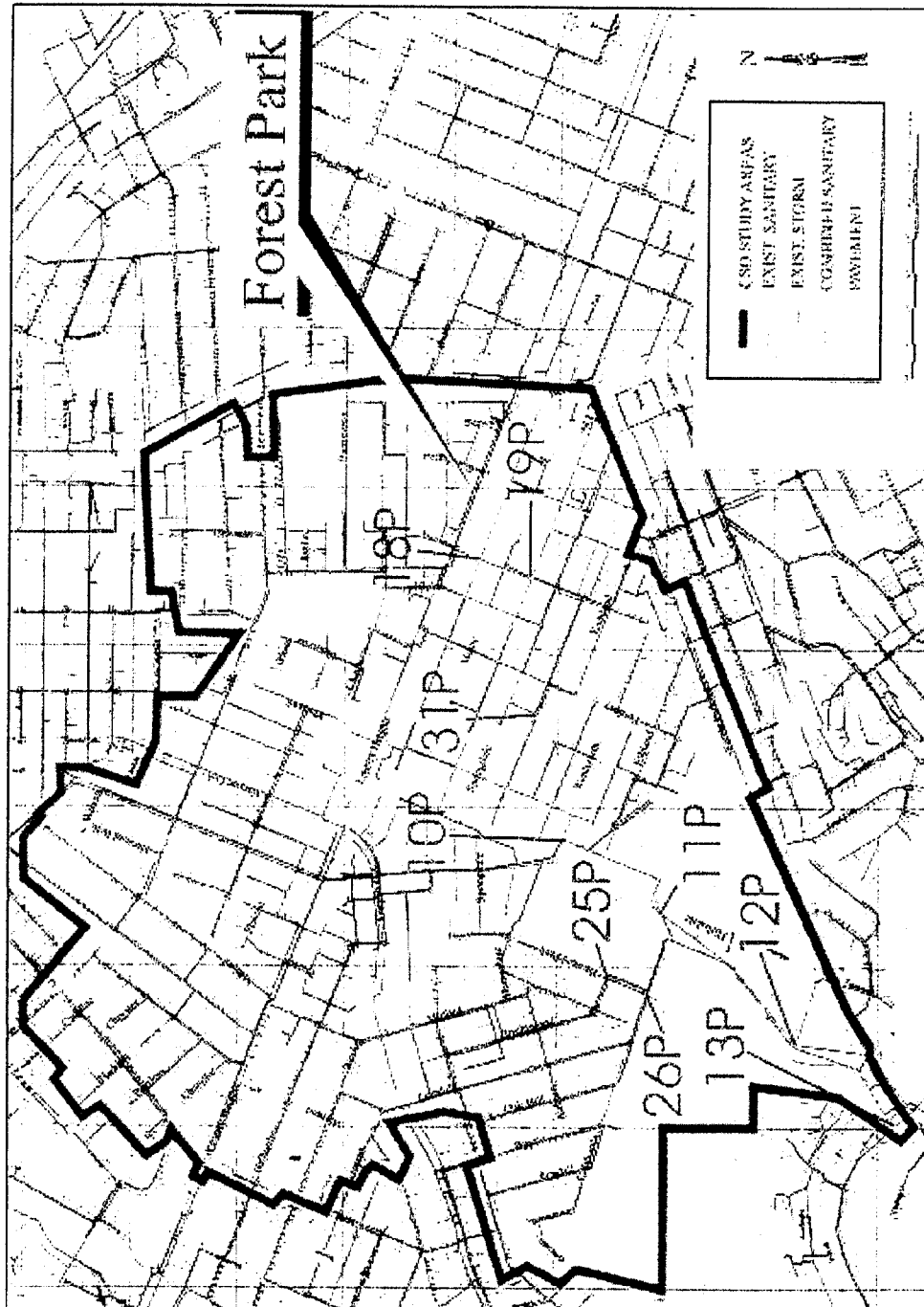
APPENDIX B
MAP OF BALTIMORE'S COMBINED SEWER SYSTEM



APPENDIX B
MAP OF BALTIMORE'S COMBINED SEWER SYSTEM



APPENDIX B
MAP OF BALTIMORE'S COMBINED SEWER SYSTEM



APPENDIX C
SANITARY SEWER OVERFLOW STRUCTURES

Number	Manhole Location	Receiving Waters	City Grid Map		Type	Outfall Pipe (in)	Control Device	Treatment Plant	Appendix D Project(s)
			Sheet	Plat Number					
5	Jones Falls Pumping Station, 3600 Ash Street	Jones Falls	7	23YY	SSO	36	Weir	Back River	3, 4, 5
20	Front and side 3229 Shelburne Road	Western Run	1	4II2	SSO	12	Flap Gate	Back River	6
21	Cross Country Boulevard and Labyrinth Road	Western Run	1	2CC2	SSO	12	Flap Gate	Back River	1
22	Cross Country Boulevard and Clarks Lane	Western Run	1	2CC2	SSO	15	Flap Gate	Back River	1
23	Opposite 6160 Cross Country Boulevard	Western Run	1	3AA2	SSO	15	Flap Gate	Back River	1
24	Opposite 5932 Cross Country Boulevard	Western Run	1	5AA2	SSO	18	Flap Gate	Back River	1
29	Opposite 2112 Western Run Drive	Western Run	2	13GG2	SSO	15	Flap Gate	Back River	1
31	NW Corner Glen and Park Heights Avenues	Western Run	1	3WW1	SSO	18	Flap Gate	Back River	6
32	Rear 3900 Glen Avenue	Western Run	1	1UU1	SSO	12	Flap Gate	Back River	6
33	Opposite 5730 Cottonworth Avenue, front of Post Office	Jones Falls	2	19EE2	SSO	15	Flap Gate	Back River	2
34	600 feet south of Post Office	Jones Falls	2	19CC2	SSO	15	Flap Gate	Back River	2
36	Side of 5927 Falls Road	Jones Falls	2	19GG2	SSO	15	Flap Gate	Back River	6
55	Front 3300 Woodland and Homer Avenues	Gwynns Run	2	9MM1	SSO	15	Flap Gate	Back River	24
56	SW Corner Ridgewood and Umatilla Avenues	Gwynns Run	2	11I1	SSO	18	Flap Gate	Back River	24
57	Front of 4515 Umatilla Avenue, north of Ridgewood	Gwynns Run	2	11I1	SSO	18	Flap Gate	Back River	24
60	NE corner Liberty Heights and Edgewood Road	Gwynns Run	7	9WW	SSO	15	Flap Gate	Back River	24
63	NW corner Liberty Heights and Wabash Avenue	Gwynns Run	7	13UU	SSO	15	Flap Gate	Back River	24
67	Approximately 200 feet south of Falls Road	Jones Falls	8	31MM	SSO	18	Flap Gate	Back River	7
68	50 feet south of North Avenue Bridge, 33 feet west of R/R tracks	Jones Falls	8	31KK	Siphon Blowoff	15	Gate Valve	Back River	11
69	NW corner Maryland Avenue and Oliver Street	Jones Falls	8	33GG	SSO	24	Flap Gate	Back River	9
72	Rear 428 E. Preston St. in RR yard	Jones Falls	8	37GG	SSO	24	Flap Gate	Back River	8, 10
79	East of Dukeland Street, south of Wilkens Avenue	Gwynns Falls	12	15S	Siphon Blowoff	8	Flap Gate	Back River	25
81	East of Dukeland Street, south of Wilkens Avenue	Gwynns Falls	12	15S	Siphon Blowoff	8	Flap Gate	Back River	25
84	Annapolis Road and Clare Street	Gwynns Falls	13	27Y	Siphon Blowoff	15	Plug Valve	Back River	20
88	5600 Govane Avenue, south of Benninghaus Road	Herring Run	3	37 YY1	SSO	10	Flap Gate	Back River	15
92	Bay View Yard south of Penn Central R/R Tracks, west of North Point Road	Herring run	15	65A	Siphon Blowoff	12	Gate Valve	Back River	16
93	5400 Todd Avenue at Seward Avenue	Moore's Run	10	67YY	SSO	8	Flap Gate	Back River	13
94	Bowleys Lane and Moravia Road	Moore's Run	10	63OO	Siphon Blowoff	15	Flap Gate	Back River	16
103	Dorchester and Cedardale Avenues	Gwynns Run	7	9YY	SSO	12	Flap Gate	Back River	24

APPENDIX D
CONSTRUCTION PROJECTS FOR ELIMINATION OF SSO AND CSO STRUCTURES

PROJECT ID NO.	PROJECT	DESCRIPTION AND REMARKS	DATE CONSTRUCTION CONTRACT ADVERTISED	DATE OF PRACTICAL COMPLETION	DATE SSO STRUCTURES ELIMINATED	SSO/CSO STRUCTURES ELIMINATED
UPPER JONES FALLS SEWERSHED						
1	Western Run Interceptor (JPI Branch) Sanitary Contract No. 760	1. Install approximately 880 linear feet of 30-inch parallel relief sewer from JPIB49 to JPI10 (along JPI90A-JPI94) 2. Install approximately 9,400 linear feet of 21- to 24-inch parallel relief sewer from JPI20 to JPI65 3. Rehabilitate approximately 3,300 linear feet of existing 18-inch sewer from JPI07 to JPI20	June 30, 2002	June 30, 2004	June 30, 2005	Eliminates SSO nos. 21, 22, 23, 24 and 29
2	Upper Jones Falls Interceptor (North & South of Pepsi Cola Plant) Sanitary Contract 772	1. Rehabilitation of approximately 15,000 linear feet of existing 42- to 48-inch sewer located between Mt. Washington Flume (JP01) and Jones Falls Pumping Station (JP76), approximately 9,900 linear feet of 42-inch sewer and approximately 5,100 linear feet of 48-inch sewer 2. Lining does not include two sections: JP19 to JP24, due to inaccessibility, and JP59 to JP70, relatively new 60-inch sewer with adequate capacity 3. Manhole and stream bank restoration	June 30, 2004	June 30, 2006	June 30, 2007	Eliminates SSO Nos. 33 and 34
3	New Jones Falls Force Main/Pressure Sewer - Lower Section	1. Replacement of approximately 1600 linear feet of force main/pressure sewer in Broadway from Oliver to East Chase Street connecting to High Level sewer 2. Improvements to gate valves and air release valves for existing force main/pressure sewer	December 30, 2002	June 30, 2004	June 30, 2005	Contributes to elimination of SSO No. 5
4	Jones Falls Pumping Station Force Main/Pressure Sewer	Upgrade existing force mains/pressure sewer to handle increased flows from rehabilitated/upgraded Jones Falls Pumping Station as well as additional flows from possible future pumping stations in Stony Run and along the JGA branch	June 30, 2005	June 30, 2007	June 30, 2008	Contributes to elimination of SSO No. 5
5	Jones Falls Pumping Station	Upgrade existing pumping station to handle at least 50 mgd	December 30, 2005	June 30, 2007	June 30, 2008	Eliminates SSO No. 5
6	Elimination of Collection System Overflows in Upper Jones Falls Sewershed	Assess hydraulics and design improvements to areas adjacent to overflows	Existing on-call contract	June 30, 2003	June 30, 2004	Eliminates SSO Nos. 20, 31, 32 and 36
LOWER JONES FALLS SEWERSHED						
7	Lower Jones Falls Interceptor (Upper Portion of Gravity Mainline) Sanitary Contract No. 773	1. Install approximately 7,900 linear feet of 18- to 24-inch parallel relief sewer from JG030 (near Jones Falls Pumping Station) to JG061 (at the connection of the JGE branch) 2. Rehabilitation of approximately 16,500 linear feet of existing sewer ranging from 12- to 50-inch 3. Inverted siphon rehabilitation in Falls Road (manhole JG062) 4. Stream bank restoration along Union Avenue near Meadow Mills at Woodberry	July 31, 2003	June 30, 2006	June 30, 2007	Eliminates SSO No. 67 (model does not show overflow as being active during a 2-year storm, but historically has been active)
8	Stony Run Interceptor and Pumping Station (JGF Branch)	1. Construct a 20 mgd capacity pumping station near manhole JGF67 in Wyman Park 2. Install approximately 2,100 linear feet of 24-inch force main from new pumping station to JFPS pressure sewer [length depends on location of pumping station] 3. Parallel approximately 4,600 linear feet of existing sewer from south of Coldspring Lane (JGF48) to the new pumping station with 12- to 18-inch sewer	December 30, 2005	June 30, 2007	June 30, 2008	Contributes to elimination of SSO No. 72; eliminates SSO No. 129
9	Maryland Avenue Interceptor (JGB Branch)	1. Replace (upsized) approximately 4,400 linear feet of existing 12- to 24-inch sewer with new 21- to 36-inch sewer along branch interceptor, excluding proposed 901 N. Howard project area 2. Improvements to siphon/SSO No. 125 under I-83 (JGB18-JGB19) 3. Sewer replacement may require crossing the CLRL	December 30, 2003	June 30, 2005	June 30, 2006	Eliminates SSO Nos. 69 & 125
10	Greenmount Avenue Interceptor and Pumping Station (JGA Branch)	1. Construct a 15 mgd pumping station near Greenmount Avenue (JGA37) 2. Install approximately 2,000 linear feet of 21-inch force main from new pumping station to JFPS pressure sewer [length depends on location of pumping station] 3. Line approximately 6,000 linear feet of 15- to 33-inch existing sewer from JGAA18 to new pumping station	December 30, 2005	June 30, 2007	June 30, 2008	Contributes to elimination of SSO No. 72
11	Elimination of Siphon Blowoff (south of North Avenue Bridge, west of RR tracks)	1. Cleaning and inspection of siphon with repairs as necessary. 2. Elimination of blow-off.	On-call contract	June 30, 2004	June 30, 2005	Eliminates SSO No. 68

APPENDIX D
CONSTRUCTION PROJECTS FOR ELIMINATION OF SSO AND CSO STRUCTURES

PROJECT ID NO.	PROJECT	DESCRIPTION AND REMARKS	DATE CONSTRUCTION CONTRACT ADVERTISED	DATE OF PRACTICAL COMPLETION	DATE SSO STRUCTURES ELIMINATED	SSO/CSO STRUCTURES ELIMINATED
HERRING RUN SEWERSHED						
12	Moores Run Interceptor - Middle Section Storm Drain 707	Construction of approximately 400 linear feet of 18-inch, approximately 600 linear feet of 21-inch, approximately 4900 linear feet 24-inch, approximately 1000 linear feet of 27-inch, and approximately 100 linear feet of 30-inch sewer to replace existing interceptor	June 30, 2003	June 30, 2005	June 30, 2006	Contributes to elimination of SSO Nos. 118 and 119
13	Moores Run Interceptor - Lower Section	Construction of approximately 6900 linear feet of 42-inch, approximately 2700 linear feet of 36-inch siphon, and approximately 3700 linear feet of 54-inch sewer to replace the existing interceptor	June 30, 2005	June 30, 2007	June 30, 2008	Eliminates SSO No. 93
14	Moores Run Interceptor - Upper Section	Construction of approximately 1700 linear feet of 18-inch and approximately 2200 linear feet of 21-inch sewer to replace the existing interceptor	June 30, 2004	June 30, 2005	June 30, 2006	Contributes to elimination of SSO Nos. 118 and 119
15	Elimination of Collection System Overflows in Herring Run Sewershed	Assess hydraulics and design improvements to areas adjacent to overflows	Existing on-call contract	June 30, 2003	June 30, 2004	Eliminates SSO Nos. 88 and 109
16	Elimination of Siphon Blowoffs (Bay View Yard south of RR tracks; Bowleys Lane/Moravia Road)	1. Cleaning and inspection of siphons with repairs as necessary. 2. Elimination of blow-offs.	On-call contract	June 30, 2004	June 30, 2005	Eliminates SSO Nos. 92 and 94
GWYNNS FALLS SEWERSHED						
17	Powder Mill System Improvements including GFR branch in Gwynns Falls Sewershed	Rehabilitation of approximately 12,000 linear feet of 12- to 24-inch conveyance piping and approximately 33,000 linear feet of 8- to 10-inch collection piping	June 30, 2003	June 30, 2006	June 30, 2007	Eliminates SSO Nos. 28P, 29P, 30P and 33P
18	Dead Run System Improvements	Clean, inspect and rehabilitate of approximately 20,000 linear feet of 12- to 24-inch conveyance piping and approximately 11,000 linear feet of 8- to 10-inch collection piping	June 30, 2003	June 30, 2006	June 30, 2007	Eliminates SSO Nos. 16P and 17P
19	Maidens Choice Interceptor	Clean, inspect, and rehabilitate 12,400 linear feet of 12- to 24-inch conveyance piping.	June 30, 2004	June 30, 2007	June 30, 2008	Eliminates SSO Nos. 23P and 24P
20	Elimination of Siphon Blowoffs (Annapolis Road and Clare Street; Chesholm Rd. west of Franklinton Rd.)	1. Cleaning and inspection of siphons with repairs as necessary. 2. Elimination of blow-offs.	On-call contract	June 30, 2004	June 30, 2005	Eliminates SSO Nos. 84 and 22P
COMBINED SEWER AREAS						
21	Walbrook	Implementation of Long Term Control Plan and combined sewer separation design in Walbrook area		June 30, 2002	June 30, 2003	Eliminates CSO No. 21P
22	Forest Park	Implementation of Long Term Control Plan and combined sewer separation design in Forest Park area	December 30, 2003	June 30, 2005	June 30, 2006	Eliminates CSO Nos. 10P, 11P, 12P, 13P, 18P, 19P, 25P, 26P, 27P and 31P
HIGH LEVEL SEWERSHED						
23	Gwynns Run Interceptor	Improvements to the Gwynns Run Interceptor	December 30, 2004	June 30, 2006	June 30, 2007	Eliminates SSO Nos. 106,107 and 130
24	Gwynns Run System Improvements	Assess hydraulics and design improvements to areas adjacent to overflows	June 30, 2003	June 30, 2006	June 30, 2007	Eliminates SSO Nos. 55, 56, 57, 60, 63, 103, 126, 127, 128 and 131
25	Elimination of Siphon Blowoffs (east of Dukeland Street, south of Wilkens Avenue)	1. Cleaning and inspection of siphons with repairs as necessary. 2. Elimination of blow-offs.	On-call contract	June 30, 2004	June 30, 2005	Eliminates SSO Nos. 79 and 81
LOW LEVEL SEWERSHED						
26	Elimination of Siphon Blowoff (rear of 800 Unetta Avenue)	1. Cleaning and inspection of siphon with repairs as necessary. 2. Elimination of blow-off.	On-call contract	June 30, 2004	June 30, 2005	Eliminates SSO No. 32P

APPENDIX E
PUMPING STATION REHABILITATION AND REPAIR PROJECTS

Sanitary Contract 9539 – Brooklyn Pumping Station

- **Replace the existing pump controls with variable frequency drives.**
- **Replace the bar screen.**
- **Replace the existing two (2) sluice gates and associated operators.**
- **Replace the existing three (3) valve actuators with electric actuators.**
- **Install new instrumentation and control systems.**
- **Upgrade the lighting and ventilation systems.**
- **Construction to divide the single chamber wet well.**

Sanitary Contract 8338 – Dundalk Pumping Station

- **Replace the existing four (4) pumps with new pumps and variable frequency drives and controls.**
- **Upgrading the electrical service to provide 480-volt, 3-phase power.**
- **Replace the existing two (2) screens and conveyor belt.**
- **Replace the existing three (3) generators with a new 1,000 kW generator.**
- **Upgrade the lighting and ventilation systems.**
- **Replacement of existing valve actuators with new electrical valve actuators.**
- **Replacement of existing aluminum slide gates with new stainless steel gates with electric motor operators.**
- **Installation of a new instrumentation and control system.**

Sanitary Contract 7508 – Jones Falls Pumping Station

- **Replace the existing vertical pumps with horizontal units.**

APPENDIX E

PUMPING STATION REHABILITATION AND REPAIR PROJECTS

- **Replace the existing flowmatcher pump controls with variable frequency drives.**
- **Dividing the wet well into three (3) sections.**
- **Upgrade the primary and secondary power systems.**
- **Flood proofing of the station to elevation 144.0'.**
- **Provide a mezzanine level for electrical equipment.**
- **Replace the bridge crane.**
- **Installation of two (2) stainless steel bar screens.**
- **Replace the sluice gates and operators with new gates with motorized operators.**
- **Upgrade the lighting and ventilation systems.**
- **Construction of two (2) new screen effluent channels.**
- **Replacement of existing valve actuators with new electrical valve actuators.**
- **Installation of new sump pumps and piping.**
- **Installation of new instrumentation and control system**
- **Installation of new flood doors and sluice gates and closure of existing wall openings and louvers.**
- **Installation of a fence grounding system.**

Rehabilitation of the Locust Point Pumping Station

- **Replace the existing two (2) pumps with new pumps and controls**
- **Rehabilitate the existing emergency generator.**
- **Replace the hydraulic valve actuator and stem seal on cone valve A.**
- **Reconfigure the pump piping arrangement.**
- **Construct a split wet well.**
- **Upgrade the lighting and ventilation systems.**
- **Repair or repair the instrumentation system.**

APPENDIX E
PUMPING STATION REHABILITATION AND REPAIR PROJECTS

Sanitary Contract 9505 – Quad Avenue Pumping Station

- **Replace the three (3) existing pumps with new dry pit submersible pumps with variable frequency drives and new pump controls.**
- **Replace existing bar screen with new stainless steel bar screens.**
- **Replace existing eight (8) sluice gates and operators with new stainless sluice gates and frames with motorized gate operators.**
- **Replace the dry well and wet well ventilation and air analyzer systems.**
- **Replace existing three (3) plug valves and three (3) cone valves.**
- **Replace the existing valve actuators with electric actuators.**
- **Replace a magnetic flow meter.**
- **Replace the existing generator with a new 500 kW unit.**
- **Upgrade the lighting systems and installation of a grounding grid.**
- **Replace the driveway and roofing system.**
- **Replacement of the drywell sump suction valve on pump #1.**
- **Upgrade of the 480 volt 3-phase power system.**
- **Installation of a new instrumentation and control system.**
- **Replacement of grating and modification of the screen room at the operational level.**

Renovation of the Westport Pumping Station

- **Replace the existing bar screen with a climber type screen.**

Wastewater Pumping Stations Equipment Checklist

Station: _____ Date: _____ Time: _____

Area	✓	Task	Equipment		Job Request		Remarks
			Operable?		Needed?		
Entry	<input checked="" type="checkbox"/>	Check incoming power source	YES	NO	YES	NO	
Controls	<input type="checkbox"/>	Check alarm lights	YES	NO	YES	NO	
Control Room	<input type="checkbox"/>	Record pumping times					
Control Room	<input type="checkbox"/>	Check/replace recording charts	YES	NO	YES	NO	
Control Room	<input type="checkbox"/>	Check pump control configuration	YES	NO	YES	NO	
Control Room	<input type="checkbox"/>	Switch pump leads sequence					
Control Room	<input type="checkbox"/>	Check wet well operating level					
Dry Well	<input type="checkbox"/>	Drain Process Air Line Condensation					
Dry Well	<input type="checkbox"/>	Check Air Compressor Operating Pressure					
Dry Well	<input type="checkbox"/>	Check Air Compressor Oil Level					
Dry Well	<input type="checkbox"/>	Check Hydropneumatic System Reservoir Level					
Dry Well	<input type="checkbox"/>	Check Hydropneumatic System Air Pressure					
Exit	<input type="checkbox"/>	Make sure equipment is back on normal operation					
Exit	<input type="checkbox"/>	Secure building					
Verify operation of the following equipment:							
Dry Well	<input type="checkbox"/>	No. 1 Main Pump	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 2 Main Pump	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 3 Main Pump	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 4 Main Pump	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 5 Main Pump	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 6 Main Pump	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 1 Waterseal Pump	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 2 Waterseal Pump	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 3 Waterseal Pump	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 1 Vacuum Pump	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 2 Vacuum Pump	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 3 Vacuum Pump	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 4 Vacuum Pump	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 5 Vacuum Pump	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 6 Vacuum Pump	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 1 Air Compressor	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 2 Air Compressor	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 3 Air Compressor	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 1 Bar Screen	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 2 Bar Screen	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	Hydropneumatic System	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	Wet Well Exhaust Fans	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	Dry Well Exhaust Fans	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 1 Main Pump Cone Valve	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 2 Main Pump Cone Valve	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 3 Main Pump Cone Valve	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 4 Main Pump Cone Valve	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 5 Main Pump Cone Valve	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 1 Main Pump Plug Valve	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 2 Main Pump Plug Valve	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 3 Main Pump Plug Valve	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	No. 4 Main Pump Plug Valve	YES	NO	YES	NO	
Dry Well	<input type="checkbox"/>	Dry Well Sump Pump	YES	NO	YES	NO	
Wet Well	<input type="checkbox"/>	Bubbler System	YES	NO	YES	NO	
Barscreen	<input type="checkbox"/>	Barscreen area fans	YES	NO	YES	NO	
Barscreen	<input type="checkbox"/>	Barscreen rakes	YES	NO	YES	NO	
Backup Power	<input type="checkbox"/>	Emergency Generator	YES	NO	YES	NO	

Supervisor I: _____ Date: _____
 Supervisor II: _____ Date: _____
 Operations Supervisor: _____ Date: _____

WASTE WATER PUMPING STATIONS

STANDARD OPERATING PROCEDURE

TO: ALL EMPLOYEES

FROM: B.G. IVINS

ATTN: SUPERVISORS

SUBJECT: TRUCK CREW STATION INSPECTION

All Stations shall be inspected twice each day and a checklist will be completed for each inspection.

ALL PERSONNEL ARE TO PERFORM A GENERAL INSPECTION WHEN ENTERING A STATION:

Purpose

- | | |
|--|---|
| 1. LISTEN FOR ANY AUDIBLE ALARMS BEFORE ENTERING STATION.
ALSO CHECK ALARM PANEL INDICATOR LIGHTS FOR ALARMS
AFTER ENTERING. NOTE ANY PROBLEMS IN STATION LOGBOOK. | Verify equipment failures, create
historical record for trouble
shooting and facility management. |
| 2. CHECK INCOMING POWER TO VERIFY PRIMARY POWER SOURCE. | Verify primary power source. |
| 3. RECORD DATE AND TIME OF VISIT. | Maintain authorized entry record. |
| 4. CHECK OR CHANGE RECORDING CHARTS. (MARK DATE & TIME). | Ensure recording of operation data. |
| 5. CHECK ALL ALARM LIGHTS AND TEST LAMPS. | Verify that alarms are working. |
| 6. NOTE PUMPING TIME FOR EACH PUMP UNIT. | Verify proper pump operation. |
| 7. CHECK CONFIGURATION OF PUMP CONTROLS. | Alternating sequence management. |
| 8. SWITCH PUMP LEAD SEQUENCE. | Maintain equal pump wear. |
| 9. CHECK WETWELL OPERATING LEVEL. | |
| 10. CHECK OPERATION OF PUMPS AND CHECK VALVES. | |
| 11. DRAIN PROCESS AIR CONDENSATION. | Prevent moisture from entering
process equipment. |
| 12. CHECK DRYWELL PUMP PUMP. | Prevent dry well flooding. |
| 13. CHECK AIR COMPRESSOR PRESSURE. | Ensure sufficient air pressure to
actuate equipment. |
| 14. CHECK AIR COMPRESSOR OIL LEVEL. | Ensure proper amount of oil in
compressor to prevent seizing. |
| 15. CHECK HYDROPNEUMATIC SYSTEM RESERVOIR LEVEL. | Ensure sufficient water level to
actuate equipment. |
| 16. VERIFY HYDROPNEUMATIC SYSTEM AIR PRESSURE. | Ensure normal operating pressure. |
| 17. VERIFY OPERATION OF WET WELL, DRY WELL, AND BAR
SCREEN EXHAUST FANS. | Prevent low oxygen levels and/or
accumulation of gases in area. |
| 18. VERIFY OPERATION OF BARSCREEN RAKES | Prevent accumulation of solids on
screens. |
| 19. BEFORE LEAVING THE FACILITY MAKE SURE THAT ALL
EQUIPMENT IS RETURNED BACK TO NORMAL OPERATION AND
THE BUILDING AND GROUNDS ARE PROPERLY SECURED. | |

The Supervisor I on the truck crew or the designated lead operator shall be responsible for completing the checklist during each station visit. A signature is required on each sheet.

SIGNATURE:

TITLE: MANAGER

DATE:

CODE: PS.-

SUPERSEDES: NA

REMOVAL DATE:

APPENDIX G

PUMPING STATION REPAIR PRIORITY RANKING SYSTEM

MAINTENANCE PRIORITY CODES

Reissue 3/1/00

Job priority codes are used by maintenance to schedule work orders in order of their importance to operations. Operations will specify a priority for each work request based upon the following guidelines:

<u>Priority</u>	<u>Class</u>	<u>Description</u>
1	Emergency	Immediate corrective maintenance is required to avoid imminent danger to life or essential facilities or major violations of the City's discharge permits. Takes preference over all other maintenance work (including jobs in progress) and must be worked around the clock until condition is stabilized.
2	Urgent	Jobs that must be accomplished as soon possible. Generally applied to repair of key process units which lack suitable back up or when call-ins off shift are required.
3	Special	Jobs that normally are considered routine, but because of special circumstances, such as dependence upon scheduled area shutdowns or precedence to other jobs requests in system should be considered a higher priority than routine. Most due-dated (promised) work will fall into this category.
4	Routine	Jobs that must be completed as soon as practical. Majority of work will be in this category including most preventive maintenance, overhauls, and repairs to back-up process units.
5	Convenient	Jobs that are desirable but may be completed when normal work is slack. Normally consists of backlog of work, which can be used to smooth out peaks and valleys in manpower loads.

Within any non-emergency priority, work orders will be generally assigned on the basis of the following:

- .Due dates (if specified); otherwise
- .First-in, First-out;
- .Common location to minimize travel; and
- .Common equipment system to minimize down time.

Priorities of work orders in backlog will be reviewed with Operations at regular coordination meetings and revised as appropriate.

**APPENDIX H
WASTEWATER COLLECTION SYSTEM VALVES**

Name of Facility	Type of Valve	Valve Size	Location	Sanitary Contract No.	Comments
Brooklyn Pump Station	Gate Valve	20"	Valve vault - Hanover Street	9539	Pump Station Isolation Valve
Dundalk Pump Station	Plug Valve	30"	Concrete vault - Parking Lot outside the pump station	8338	Pump Station Isolation Valve
Eastern Avenue Pump Station	Gate Valve	42"	Outside valve vault #1	594	
	Gate Valve	42"	Outside valve vault 'A'	594	
	Gate Valve	42"	Outside valve vault 'B'	594	
	Gate Valve	42"	Outside valve vault #4	594	
	Gate Valve	42"	Outside valve vault #3	594	
	Gate Valve	24"	Outside valve vault #6	594	Valve is not in use
	Gate Valve	42"	Outside valve vault #5	594	
	Gate Valve	42"	Outside valve vault 'C'	594	
	Gate Valve	42"	Outside valve vault 'C'	594	
	Gate Valve	60"	Outside valve vault 'C'	594	
Jones Falls Force Main	Gate Valve	30"	Valve vault - Chesnut Street	530	
	Gate Valve	30"	Vale vault - 33rd Street west of Chesnut Street	530	
Southwest Diversion Structure	Sluice Gate	66"x72"	Baltimore Street	628	Flow diversion to Patapsco WWTP
	Sluice Gate	36"x42"	Baltimore Street	628	Flow diversion to Back River WWTP
Western Run Diversion Structure	Sluice Gate	24"x24"	Western Run Drive - MH 32 & 33	692	

Appendix I

City of Baltimore
Department of Public Works
Bureau of Water and Wastewater
Patapsco Wastewater Treatment Plant
Biological Nutrient Removal Design Project

SUPPLEMENTAL ENVIRONMENTAL PROJECT

The City of Baltimore, in support of the Chesapeake Bay Agreement, will design biological nutrient removal ("BNR") improvements to the Patapsco Wastewater Treatment Plant ("WWTP") with the objective of reducing nutrient (*i.e.*, nitrogen and phosphorus) discharge to the Patapsco River and subsequently the Chesapeake Bay to achieve the future total maximum daily loads ("TMDLs") for the Patapsco River and to ultimately comply with future permit limitations for nitrogen and phosphorus.

The Patapsco WWTP BNR Project work shall include the evaluation of historical wastewater characteristics data; the evaluation of prior BNR studies; and the performance of pilot BNR testing of the Patapsco effluent and bench-scale testing of portions of the Patapsco effluent to screen treatment alternatives and to maximize nitrogen removal capabilities of selected treatment processes. In addition, the BNR work will include the development of conceptual designs of selected alternatives to identify the most cost-effective means to remove nitrogen from the Patapsco WWTP flow prior to discharge.

The Patapsco BNR Project design will be developed to the 30% completion stage, including the collection of the geotechnical data and site condition information. A value engineering review will be performed at the 30% completion stage. The Patapsco BNR design project will be further developed through the 60%, 90%, 100%, and bid-ready document stages, and will include the preparation of the civil, structural, hydraulic, process, mechanical, electrical, HVAC, instrumentation/control designs and preparation of the construction plans, specifications, and cost estimates.

The preliminary cost opinion for all design work to bid-ready completion is at least approximately \$13,600,000 with the City's share estimated as at least \$2.72 million. To construct the Patapsco WWTP BNR facilities with minimal impact on its capability to maintain treatment, the design process will stage the BNR facilities improvements into at least three (3) major construction contracts. The design and associated stages of construction contracts will be scheduled to ensure maintenance of the Patapsco WWTP's wastewater treatment capabilities during construction and to minimize the site congestion resulting from multiple construction

contracts. Conceptually, the Patapsco BNR project design (and consequently construction) sequence will start with BNR treatment of the Low Level portion of the Patapsco wastewater flow followed by the design and construction of the new BNR facilities and concluding with the design and construction of the existing facilities BNR modifications. While portions of the design and construction phases could be overlapped, the sequence of construction schedule may reflect the completion and operation start-up of one contract prior to removing the treatment facilities of the next construction contract from service.

The design portion of the Patapsco WWTP BNR Project will be completed by Baltimore by the project design milestone dates set forth below:

Milestone Dates for Study/Design of Patapsco WWTP BNR Project

<u>Activity</u>	<u>Notice to Proceed</u>	<u>Completion</u>
Study/30% Design	March 2002	August 2004
Low Level BNR Design	November 2003	May 2005
New BNR Facilities Design	March 2004	March 2006
BNR Modifications Design	June 2007	June 2009

Baltimore shall submit to EPA and MDE the design memorandum for the Study/30% Design phase of the Patapsco WWTP BNR Project no later thirty (30) days after the August 2004 Study/30% Design completion milestone date. Baltimore shall submit to EPA and MDE a detailed process flow diagram (specifying volumetric flow rates and nutrient concentration for influent, effluent, and internal process streams (i.e., for flow between treatment elements and other pieces of critical equipment)), treatment elements, and critical pieces of equipment.

The final BNR design shall incorporate the most effective technology transferable to the BNR treatment works site and available to Baltimore as of March 2002. Baltimore shall design the BNR process to remove the amount of nutrients achievable within the limits of this technology, and estimates that currently available technology can achieve effluent concentrations as low as 5 mg/l to 3 mg/l.

Baltimore may apply to EPA and MDE to extend the milestone dates set forth above for the Low Level Design, New BNR Facilities Design, and the BNR Modifications Design phases

of the Pataspc WWTP BNR Project. Such application for extension shall be based upon the conclusions reached by Baltimore as result of the work performed in connection with the "Study/30% design phase" of the Pataspc WWTP BNR Project. Consistent with the Chesapeake Bay Agreement, under no circumstances shall the dates for the Low Level Design, New BNR Facilities Design, and the BNR Modifications Design phases of the Pataspc WWTP BNR Project be extended to cause completion of the construction of the BNR project to extend beyond December 31, 2010.

It is expressly understood that this SEP is for completion of design phases only, and does not include any phase of actual construction.