EAST BAY MUNICIPAL UTILITY DISTRICT

RFP No. INF-013 Hydraulic Model and Calibration

ADDENDUM #1

Receipt of this Addendum must be acknowledged by the PROPOSER , per the requirements of the Request for Proposals (RFP).

This Addendum for the INF-013 Hydraulic Model and Calibration RFP includes:

1. An alteration of the original RFP, including the following provided in red-line:
    a. Altered Response Due Date;
    b. Altered timeframe for Interviews (if held); and
    c. Updated and consolidated link provided for the following documents:
        i. Consent Decree
        ii. Flow Model Calibration Plan
        iii. Performance Evaluation Plan

2. EBMUD responses to questions submitted are provided below.

QUESTIONS AND ANSWERS

Q1. ***We are having issues access the linked files. Could you please provide the Performance Evaluation Plan (PEP), the Consent Decree and the Flow Model Calibration Plan?***

A1 The Consent Decree, Flow Model Calibration Plan, and PEP are located here: https://sfebaywwjntdef.egnyte.com/fl/jFW5vOEUQN

Please note, the files have been consolidated to one location and the link has been updated from those originally provided in the RFP.

Unfortunately, data limits prevented the availability for potential PROPOSERs to access the linked files with the RFP. Access to the files has been restored effective March 6, 2025. To compensate for the period in which the files were not available for review, the schedule has been modified as follow:

Response Due	March 26, 2025, 4:00 p.m. (from March 19)
Interviews (If held)	Week of April 21, 2025 (from Week of April 14, 2025)

Q2. ***Could you please provide the data for the December 5, 1952 storm event? We are looking for precipitation values or volumes with durations provided that would help us understand the magnitude of the storm event.***

A2 Please find the technical memorandum documenting the storm event and the adjustments to the precipitation depths over the service area appended to this document.

Q3. ***Can you please provide the current flow model in InfoSWMM for review?***

A3 The FY24 hydraulic model for the December 5, 1952 Storm is available here: https://sfebaywwjntdef.egnyte.com/fl/AyV32WipiH

Q4. ***Can you please define what the Output Ratios are and how they are used in the hydraulic model?***

A4 The Output Ratios are calculated from the results determined by the hydraulic model; they are not utilized in the performance of either the hydrologic or hydraulic model.

The Output Ratio is calculated as the discharge volume for a wet weather facility during a given model year divided by the discharge volume which would have occurred in the Baseline condition. The Output Ratios are a means to contextualize reductions in inflow and infiltration, as well as to demonstrate progress towards and compliance with the Wet Weather Consent Decree established benchmarks.

Q5. ***Can you please provide further detail about the climatological conditions analysis and the effort expected? Is a climate specialist needed for this analysis or is this a high level factor that can be generated from looking at historic trends?***

A5 EBMUD is not able to specify the type of individual(s) necessary to perform the work; we are deferring to the expertise of PROPOSERs regarding the appropriate skill set(s).

The annual Flow Model update incorporates changes to the collection system based on rehabilitation implemented since the previous update. The annual Flow Model calibration refines base sanitary flows, groundwater infiltration and rainfall-dependent inflow and infiltration to best represent actual hydrological conditions from the previous rainy season. As calibration refinements are implemented to match actual system responses, the impacts of rehabilitation effectiveness and climatological impacts become co-mingled. In wet years, the effectiveness of rehabilitative efforts may be understated, due to the introduction of sources of inflow and infiltration that may only contribute flows during elevated conditions. Similarly, in dry years, the effectiveness may be overstated, due to the temporary removal of sources due to depressed conditions. The DISTRICT is requesting for the CONSULTANT to develop a methodology to add context for the annual review regarding performance relative to the goals and objectives of the Wet Weather Consent Decree.

East Bay Municipal Utility District

I/I Control Program

Data Assessment and Modeling Project

Technical Memorandum

East Bay December 5, 1952 Rainfall Event Definition

February 4, 2014 – FINAL

Prepared by: Paul Giguere

Reviewed by: Alison Hill

I. INTRODUCTION

The intent of this memorandum is to define the rainfall record for the East Bay December 5, 1952 Storm and to describe the manner in which it will be consistently applied in analyses carried out pursuant to the Consent Decree currently being negotiated between USEPA, EBMUD and the local municipalities.

II. Rainfall Record

The storm employed for hydrologic and hydraulic analyses is based upon the December 5, 1952 rainfall record from the rain gauge at the Oakland CA airport (NWS COOP: 04 6335). As the referenced station provides hourly data, the data was disaggregated into 15 minute data, with peak 15 minute and 30 minute rainfall amounts in the peak hour of 0.35 inches and 0.47 inches, respectively. For the remaining six hours, relatively uniform 15 minute distribution of each hourly rainfall amount was assumed. This resulted in the following 15 minute rainfall record:

Time Since Event Start (Hours:Minutes)	Rainfall (Inches)	Time Since Event Start (Hours:Minutes)	Rainfall (Inches)
0:15	0.005	4:00	0.060
0:30	0.005	4:15	0.065
0:45	0.010	4:30	0.065
1:00	0.010	4:45	0.065
1:15	0.015	5:00	0.065
1:30	0.025	5:15	0.065
1:45	0.040	5:30	0.060
2:00	0.050	5:45	0.050
2:15	0.083	6:00	0.045
2:30	0.125	6:15	0.020
2:45	0.350	6:30	0.010
3:00	0.083	6:45	0.005
3:15	0.070	7:00	0.005
3:30	0.060	Total	1.570
3:45	0.060		

In cases where this storm is to be applied using a model that was intended for simulating hourly rainfall data, the rainfall in each hour should be computed as the sum of the four 15-minute rainfall amounts shown in the table above for that hour. It is anticipated that such cases will be limited to simulations of individual collection systems by Satellites that are using models that were calibrated based on hourly rainfall data.

The amount of rainfall in a given Interceptor Tributary Area (ITA) or Satellite Tributary Area (STA) will be calculated by multiplying the rainfall intensities from the table above by the multipliers shown in Exhibits A and B. For any analysis requiring application of the storm to Satellite subbasins that are subsets of ITAs or STAs, the subbasin rainfall multipliers shall be based on a rainfall spatial distribution pattern that is consistent with the ITA and STA multipliers in Exhibits A and B.

III. Event Simulation Conditions

Application of the storm for event simulation shall include the following assumptions:

- Rainfall will be applied simultaneously to the entire service area.
- For multi-ITA simulation of interceptor flows and WWF discharge, base wastewater flow (BWF) will be represented using the most recently observed average BWFs with a typical weekday diurnal profile as determined from observed flows, and rainfall will be assumed to start at 3 a.m.
- For single-ITA or subbasin simulations, the timing of the storm and/or the shape of the diurnal profiles will be adjusted such that the peak of the rainfall-dependent I/I (RDI/I) hydrograph will correspond to BWF that is equal to or greater than the average of the highest three hours during a typical weekday.
- R values used will be the maximum R values calculated for the wet weather events monitored for the relevant calibration monitoring period, so as to simulate fully-saturated soil conditions.
- For each ITA and STA, groundwater infiltration (GWI) rates will be representative of seasonally-elevated GWI during a wet year, as determined by the highest relevant GWI rates observed for that ITA or STA.

Exhibit A: Rainfall Multipliers for Interceptor Tributary Areas (ITAs)

ITA	Rainfall Multiplier
01-1	1.19
02-1_2	1.23
02-3	1.10
10-1	1.22
10-2	1.13
11-1	1.18
11-2	1.20
11-3	1.08
11-4	1.10
12-1	1.12
12-2	1.09
13-1	1.13
13-2	1.09
13-3	1.10
14-1	1.20
14-2	1.17
14-3	1.10
15-1	1.16
15-2	1.12
15-3	1.08
15-4	1.08
15-5	1.08
16-1	1.04
17L-1	1.15
17U-1	1.32
20-1	1.08
20-2	1.05
21L-1	1.08
21L-2	1.03
21U-1	1.18
22-1	1.06
23-1	1.06
24-1	1.04
50L-1	1.18
50U-1	1.32
52-1	1.06
54-1_2	1.22
56-1	1.40
58-1	1.15
59-1	1.09
60-1	1.10
60-2	1.10
61-1	1.08
61-2	1.08
62-1	1.10
62-2	1.10
62-3	1.10
64-01	0.99
64-01P	0.98
64-02	1.00
64-03	1.01
64-04	1.02
64-05	1.02
64-06	1.02
64-07	0.98
64-08	1.02
64-09	1.00
64-10	1.04
64-11	1.00
64-12	1.00
64-13	1.01
64-14	1.00
64-15	1.03
64-16	1.02
64-17	0.99
64-18	1.02
64-19	1.01
64-20	1.01
64-21	1.00
64-22	1.02
64-23	1.01
64-24	1.01
64-25	1.01
64-26	1.02
64-27	1.01
64-28	1.02
64-29	1.02
64-30	1.02
80-1	1.24
80-2	1.10
81-1_2	1.14
81-3	1.10
81-4	1.10
82L-1	1.12
82L-2	1.10
82U-1	1.14
83L-1	1.10
83L-2	1.08
83L-3	1.08
83L-4	1.08
83L-5	1.08
83L-6	1.08
83U-1_2_4	1.22
83U-3	1.14
84L-1	1.10
84L-2	1.06
84L-3	1.04
84L-4	1.07
84U-1	1.14
84U-2	1.16
84U-3	1.14
85L-1	1.06
85U-1	1.16
85U-2A	1.10
85U-2B	1.12
86-1	1.03
86-2	1.03
87-1	0.98
87-2	1.02
90-1A	0.98
90-1B	1.01
90-2	0.95
90-3	1.02
90-4	1.02
91-1	0.96
92-1	0.98
93-1	1.02
93-2	1.01
94-1	1.05
94-2	1.05
96-1	1.05
97-1	1.02
98-1	0.97

Exhibit B: Rainfall Multipliers for Satellite Tributary Areas (STAs)

STA	Rainfall Multiplier
10-S1	1.22
10-S1B	1.22
10-S2S	1.28
11-S1B	1.22
11-S2B	1.20
11-S3UCV	1.12
11-S4A	1.08
14-S1A	1.08
17L-S1O	1.20
17U-S1O	1.34
17U-S2	1.34
17U-S2O	1.34
17U-S3O	1.34
17U-S4B	1.32
17U-S5O	1.28
17U-S6O	1.28
17U-S7O	1.30
17U-S8UCB	1.32
20-S1O	1.12
20-S2O	1.10
20-S3O	1.10
21L-S1	1.10
21L-S1O	1.10
21L-S2O	1.12
21L-S3E	1.10
21U-S1B	1.18
22-S1O	1.10
23-S1E	1.06
50L-S1E	1.10
50L-S2B	1.30
50U-S1B	1.30
54-S01	1.26
54-S01P	1.26
54-S02P	1.28
54-S03P	1.24
54-S04P	1.26
54-S05_06	1.27
54-S05P	1.27
54-S06P	1.27
54-S07	1.30
54-S07P	1.30
54-S08O	1.34
54-S09	1.34
54-S10P	1.30
54-S11P	1.30
54-S12P	1.28
54-S13O	1.32
54-S14O	1.32