Dan Madden
MUNICIPAL SERVICES DIRECTOR
dmadden@turlock.ca.us

MUNICIPAL SERVICES
ADMINISTRATION

156 S. BROADWAY, SUITE 270 | TURLOCK, CALIFORNIA 95380 | PHONE 209-668-5590 | FAX 209-668-5695

JDM

June 17, 2009

RECEIVED
SACRAMENTO
CVRWQCB
09 JUN 18 AM 10:43

Mr. Jim Marshall, P.E.
Senior Engineer
Water Quality Control Engineer
California Water Quality Control Board
Central Valley Division
11020 Sun Center Drive, #200
Rancho Cordova, CA 95870-6114

Subject: City of Turlock Independent Mixing Zone Study for Disinfection Byproducts and Nitrate, NPDES NO. CA0078948

Dear Mr. Marshall:

The Central Valley Regional Water Quality Control Board (Regional Board) recently postponed proceedings to adopt the January/February 2009 tentative order (TO) version of the NPDES permit for the City of Turlock (City) Water Quality Control Facility's (WQCF) existing discharge to the Harding Drain and proposed discharge to the San Joaquin River. The City's understanding was that Regional Board staff were awaiting the State Water Resources Control Board's (State Board) decision on the City of Tracy permit renewal appeal. Specifically, the issue of the required mixing zone studies was of relevance to the City's NPDES permit renewal. The City of Tracy remand order was adopted on May 19, 2009, and the City of Turlock understands that Regional Board staff will soon re-initiate the NPDES permit renewal proceedings for the WQCF.

The enclosed mixing zone study, independently prepared by Larry Walker Associates for the City, satisfies the mixing zone study requirements of the State Implementation Plan (SIP) to allow a mixing zone and dilution credit in developing water quality based effluent limitations for nitrate and human health (carcinogen-based) constituents. The study is also consistent with the State Board's order on the City of Tracy matter.

The City also conducted upstream San Joaquin River sampling with lower reporting limitations for nitrate and the disinfection byproduct constituents. These data establish the available assimilative capacity of the River.

The City requests additional amendments to the existing TO to (1) incorporate the recommendations of the enclosed mixing zone study and (2) recalculate effluent limitations consistent with the enclosed report. Please let me know if you need any additional information or have questions or comments.

Sincerely,

Dan Madden
Municipal Services Director

cc:
Michael Cooke, City of Turlock
John Steven Wilson, City of Turlock
Nicole Granquist, Downey Brand
Brian Laurenson, Larry Walker Associates

JDM

TECHNICAL MEMORANDUM

LARRY WALKER ASSOCIATES

DATE: June 16, 2009

TO: Dan Madden, City of Turlock
Michael Cooke, City of Turlock
John Steven Wilson, City of Turlock

CC: Nicole Granquist, Downey Brand

Laura Foglia, Ph.D.
Brian M. Laurenson, P.E.
707 4th Street
Suite 200
Davis, CA 95616
530.753.6400 ext.230
530.753.7030 fax

LauraF@lwa.com
BrianL@lwa.com

SUBJECT: **CITY OF TURLOCK WATER QUALITY CONTROL FACILITY –SAN JOAQUIN RIVER DISCHARGE MIXING ZONE STUDY AND REQUESTED AMENDMENT TO TENTATIVE ORDER, NPDES NO CA0078948**

Introduction

In January 2009, the Central Valley Regional Water Quality Control Board (Regional Board) issued a revised tentative order (TO) for the City of Turlock Water Quality Control Facility's (WQCF) existing discharge to the Harding Drain, and the proposed discharge to the San Joaquin River. The TO considered San Joaquin River discharge dilution for proposed effluent limitations to implement the long-term human health California Toxics Rule (CTR) water quality criteria for disinfection byproducts (carbon tetrachloride, chlorodibromomethane and dichlorobromomethane), but did not authorize dilution for the proposed effluent limitation for nitrate implementing the chemical constituents water quality objective, protective of municipal drinking water supplies. The Regional Board suspended TO adoption proceedings until the State Water Resources Control Board (State Board) issued a ruling on the City of Tracy NPDES permit appeal, which involves issues relevant to the City of Turlock's permit renewal. The State Board issued its final ruling on May 19, 2009. The City of Turlock expects Regional Board staff to re-initiate the NPDES permit renewal proceedings for the WQCF shortly.

In the interim, the City of Turlock contracted Larry Walker Associates (LWA) to perform an evaluation to determine: 1) the point of complete mixing downstream of the City's proposed discharge, 2) the dilution ratio at a "near-field" downstream location at the edge of a mixing zone for nitrate, and 3) the distance downstream to reach a dilution ratio equivalent or sufficient to authorize the requested protective performance based nitrate effluent limitation (D=1.8).

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This mixing zone study report satisfies the mixing zone allowance requirements of the State Implementation Plan[1] (SIP) for long-term human health constituents, such as disinfection byproducts (carbon tetrachloride, chlorodibromomethane and dichlorobromomethane) and is consistent with the Basin Plan's protection of municipal water supplies, including nitrate. Because the proposed discharge outfall is not yet constructed, this mixing zone study does not include field verification of the modeled conditions.

STATE IMPLEMENTATION PLAN INCOMPLETE MIXING REQUIREMENTS

To consider dilution for discharges with "incomplete" mixing, the SIP requires the discharger to complete an "independent mixing zone study" that demonstrates the mixing zone does *not*:

1. compromise the integrity of the entire water body;
2. cause acutely toxic conditions to aquatic life passing through the mixing zone;
3. restrict the passage of aquatic life;
4. adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or state endangered species laws;
5. produce undesirable or nuisance aquatic life;
6. result in floating debris, oil, or scum;
7. produce objectionable color, odor, taste, or turbidity;
8. cause objectionable bottom deposits;
9. cause nuisance;
10. dominate the receiving water body or overlap a mixing zone from different outfalls; or
11. be allowed at or near any drinking water intake. A mixing zone is not a source of drinking water. To the extent of any conflict between this determination and the Sources of Drinking Water Policy (SWRCB Resolution No. 88-63), this determination supersedes the provisions of that policy.

Furthermore, the SIP specifies "The application for the permit shall include, to the extent feasible, the information needed by the Regional Board to make a determination on allowing a mixing zone, including the calculations for deriving the appropriate receiving water and effluent flows, and/or the results of a mixing zone study." Specifically, the State Board requested in the City of Tracy remand order[2] that according to the SIP, the mixing zone shall 1) be as small as practicable and 2) not dominate the receiving water body. The State Board interprets the SIP to also require that a permit "identify the mixing zone boundaries."

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[1] State Water Resources Control Board, "Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California" (California Environmental Protection Agency, 2005)

[2] State Water Resources Control Board, "Order WQ 2009-0003 (City of Tracy)" (State of California)

LONG TERM HUMAN HEALTH MIXING ZONE

CTR drinking water based human health water quality criteria apply to water bodies with an existing or potential "municipal water supply" beneficial use (MUN). In the Basin Plan, the Regional Board has identified MUN as a potential beneficial use of the San Joaquin River reach to which the City discharges. The CTR human health water quality criteria are calculated as a one-in-a-million cancer risk increase for 70 years of daily exposure. Fish/organism consumption is not a significant pathway for volatile organic constituent exposure as they have low bioconcentration factors as evident by the significantly higher "organism only" CTR human health water quality criteria. The mixing zone is sized as the distance to complete mixing in order to maximize available dilution. Because of the long-term and limited exposure pathway, longer mixing zones can be acceptable.

NITRATE MIXING ZONE

The Basin Plan's chemical constituents water quality objective incorporates by reference maximum contaminant levels (MCLs) adopted by the Department of Public Health (DPH) in Title 22 of the California Code of Regulations to protect existing or potential MUN beneficial uses, including Table 64431-A set forth in Title 22 for inorganic constituents. The Basin Plan does not specify an averaging period for compliance (DPH recommends annual compliance periods), however, the effluent limitation can be expressed as a monthly average based on protection of infants from short-term consumption exposure, and mixing zones should be small enough to be tailored to protecting this population.

The calculated water quality based effluent limitation in the TO, without consideration of dilution, is lower than the requested achievable performance-based effluent limitation. With consideration of full dilution technically supportable, the calculated effluent limitation would exceed the requested performance-based effluent limitation. Based on a review of historical effluent nitrate concentration, the requested performance-based effluent limitation is more protective than the water quality based effluent limitation that uses dilution (D) greater than 1.8. An effluent limitation for nitrate based on historical performance would ensure that the nitrate discharge concentration does not increase.

Methods

LWA prepared and ran the Cornell Mixing Zone Expert System (CORMIX) to simulate the proposed discharge plume's hydraulic interaction with the San Joaquin River. LWA examined the most critical hydraulic conditions based on SIP guidance (SIP, Table 3). LWA developed primary 'base scenario' hydraulic conditions (effluent and river flows to calculate dilution ratios) for both the Basin Plan nitrate and the CTR human health mixing zones (model scenarios No. 1 and No. 2, respectively). LWA also considered six 'secondary' river and discharge hydraulic conditions to check other potentially critical dilution conditions. LWA ran the model to determine the following outcomes:

1. distance downstream to complete mixing under SIP-specified long-term human health hydraulic conditions
2. distance downstream to a dilution of D=1.8 (S=2.8) where a calculated performance based nitrate effluent limitation is more protective than the water quality based effluent limitation

3. dilution (D) at the downstream monitoring location 400 meters from the proposed outfall

LWA selected a location 400 meters downstream because it coincides with the downstream monitoring location where the City will collect future data as part of the expected permit requirements and is within the immediate area of the discharge adjacent to City property. Because the discharge outfall is not yet constructed, LWA also tested the sensitivity of the discharge spillway hydraulics.

HYDRAULIC CONDITIONS

The SIP specifies that the dilution ratio for CTR human health criteria is the harmonic mean receiving water flow to the long-term arithmetic mean effluent flow during period of discharge. The maximum permitted flow (31 cfs) was used as the long term average as a conservative estimate, although the City currently discharges significantly less (average daily = 17.7 cfs). LWA modeled this hydraulic scenario for carbon tetrachloride, chlorodibromomethane and dichlorobromomethane assuming these volatile constituents were conservative.

The Basin Plan water quality objective for nitrate warrants a shorter exposure period than the CTR human health water quality criteria. However, the SIP does not specify alternate dilution calculation methods for this purpose. Based on typical nitrate drinking water objective compliance monitoring frequency (quarterly to annually), it is protective to base nitrate dilution on a critical condition such as the lowest monthly average daily receiving water and effluent flows. A "30Q10" flow is used as the lowest 30 day average daily flow in a ten year period.

LWA calculated the harmonic mean, 30Q10, and 7Q10 using USEPA's DFLOW software with San Joaquin River at Newman daily flow data from 1980 through 2008. LWA previously provided the flow data used to the Regional Board as an electronic file.[3]

LWA used the base scenario input conditions to conservatively estimate the resultant downstream dilution at the edge of the potential mixing zones. Additionally, LWA considered other flow conditions to quantify the sensitivity of these assumptions. The base scenario hydraulic conditions are specified in **Table 1,** and the secondary (sensitivity) scenarios are specified in **Table 2**.

Table 1. Modeled Hydraulic Conditions: Base Scenarios

Model Scenario No.	Effluent Flow (cfs)	Effluent Flow Basis	San Joaquin River Flow (cfs)	San Joaquin River Flow Basis
1	31	Maximum Permitted	180	30Q10
2	31	Maximum Permitted	617	Harmonic Mean

[3] Laurenson, Brian, LWA, Email communication to James Marshall, CVRWQCB, December 1, 2008.

Table 2. Modeled Hydraulic Conditions: Secondary Scenarios

Model Scenario No.	Effluent Flow (cfs)	Effluent Flow Basis	San Joaquin River Flow (cfs)	San Joaquin River Flow Basis
3	31	Maximum Permitted	157	7Q10
4	31	Maximum Permitted	15,000	High river flow
5	17.7	Long-term average	617	Harmonic Mean
6	17.7	Long-term average	157	7Q10
7	17.7	Long-term average	180	30Q10
8	17.7	Long-term average	15,000	High river flow

CORMIX

CORMIX is a software system for the analysis, prediction and design of aqueous pollutant discharges into water bodies. CORMIX is a collection of subprograms that model the different "regimes" of fluid dynamics from the near-field mixing that is a physical interaction to far-field dispersion. The river cross section geometry, discharge structure geometry, river and effluent flow rate and velocity, and constituent concentrations are used by the "expert system" section of CORMIX to evaluate the most appropriate subprogram for a particular point within a system. The major computational effort and development emphasis is on the initial, near-field mixing zone. USEPA approved CORMIX for use in mixing zone determinations, and CORMIX has been used in many Regional Board-approved mixing zone applications. Receiving water and discharge data are required to model the effluent mixing. CORMIX can model side channel discharges and diffuser outfalls into river receiving waters. Graphical results of various projects are posted on the CORMIX website (www.cormix.org). (USEPA, 1996).

The research and development supporting CORMIX has focused on the expert system to select model coefficients internally, transparent to the user. Using CORMIX successfully revolves around developing geometrical representations of the riverbed and discharge, along with and river staging relationships. The accuracy of the CORMIX calculations in estimating specific site data is directly tied to how well the geometry and flows have been characterized (Doneker and Jirka, 2002). Data from the mixing zone study may be used to define the proper schematizations for the CORMIX model to represent the conditions specific to the WQCF effluent and the San Joaquin River.

CORMIX is a steady state model. Because mixing processes occur on the order of minutes, so long as flow rates may be considered constant over several minutes, the steady state model is adequate.

MODEL INPUTS AND ASSUMPTIONS

CORMIX requires that the cross section of the ambient water body be described by an equivalent rectangular channel. Furthermore, that channel is assumed to be uniform in the downstream direction; the actual water body "mean" flow may be non-uniform or meandering. The process of describing a receiving water body's geometry with a rectangular cross-section is known as schematization (USEPA 1996). However, because cross section bathymetry was not available for the analysis, LWA estimated the cross section geometry using aerial photo width measurements

and the observed flow rates and velocity for one day. The boundaries developed by the schematization process are representations of boundaries the discharge flow is likely to contact.

Ambient River Conditions

LWA developed the schematized cross section to best preserve the available dilution volume and average water velocity. The depth of the cross section represents the local water depth surrounding the discharge.

LWA calculated depth for a schematized cross section in the proximity of the location of the discharge outlet for the 7Q10 flow, 157 cfs, for the 30Q10, 180 cfs, and for the harmonic flow, 617 cfs. City field staff measured the river flow velocity (1.89 ft/s) for a flow of 545 cfs. The river width is approximately 30.5 meters (100 feet).

Manning's equation (eq. 1) has been used to predict the depth for a given design flow (subscript 2 in eq. 1), when the depth is known for a certain flow condition (subscript 1 in eq. 1):

$$HA_2 = HA_1 \left[\frac{QA_2}{QA_1} \right]^{3/5} \qquad (1)$$

where HA is the mean ambient depth and QA is the ambient river flow.

The measured and calculated river depths at discharge outlet are presented in **Table 3**:

Table 3. River Depths Calculated for a Given Flow with Manning's Equation at the Discharge Outlet Location.

River Flow (cfs)	River Depth (feet)	Calculation Method
545	2.88	Measured
157 (7Q10)	1.74	Calculated
180 (30Q10)	1.86	Calculated
617 (harmonic mean)	3.05	Calculated
15,000 (high flow)	14.0	Calculated

Effluent Conditions

The proposed outfall structure (**see Appendix A**) includes an aeration "cascade" structure to ensure sufficient dissolved oxygen concentrations prior to discharge. The City may modify the design of the structure to improve mixing and discharge hydraulics.

LWA schematized the outfall hydraulic cross section with a rectangular section 2 meters wide by 0.2 meters deep correspondent to the maximum permitted flow rate. The cascading outfall apron structure is constrained to a 20 foot (6 meter) width, however, because of the steep 50% grade, the "width of flow" is expected to be a fraction of the total width. The expected width values are also constrained to the CORMIX-allowable width to depth ratios. LWA examined this assumption in the sensitivity analysis, and the assumptions should be field verified after construction of the outfall structure.

Results

Base scenario model outputs are included as **Appendix B** for all scenarios. LWA evaluated 1) the downstream distance at which the effluent is fully mixed, 2) the distance at which dilution D = 1.8 (S =2.8) and 3) the downstream dilution at 400 meters from the discharge outlet. Table 4 summarizes the model results.

Table 4 Results for the Base Scenarios: discharge depth = 0.2 m, discharge width = 2.0 m

	Model Scenario	Distance Downstream to Complete Mixing (meter)	Distance Downstream to S = 2.8 (meter)	Dilution (S) at 400 meters Downstream
1	Ambient Flow 617 cfs, Effluent Flow 31 cfs	3,048	3.15	8.7
2	Ambient Flow 180 cfs, Effluent Flow 31 cfs	3,007	11.7	4.9

Initial mixing at the point of discharge is momentum and buoyancy based; complete mixing is then achieved more slowly through dispersion as the narrow plume "hugs" the eastern bank of the river.

LWA also modeled the proposed discharge for six secondary scenarios (**Table 2**) and a range of discharge outfall hydraulics. **Figure 1** and **Figure 2** summarize the model results; additional sensitivity results are in **Appendix C**.

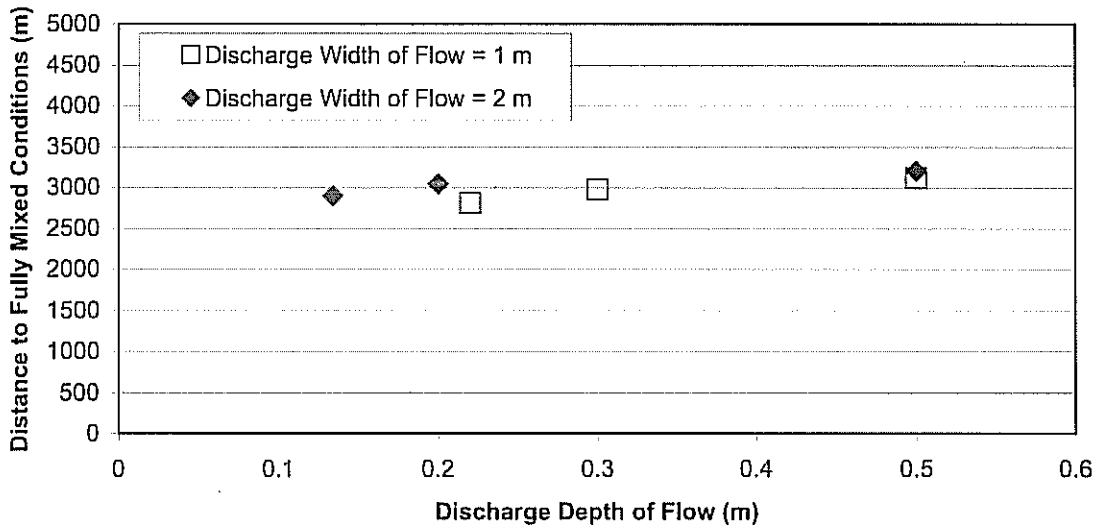

Figure 1. Base condition no. 1 sensitivity analysis for distance to fully mixed conditions for depth and width of discharge assumptions where river flowrate = 617 cfs and effluent flowrate = 31 cfs.

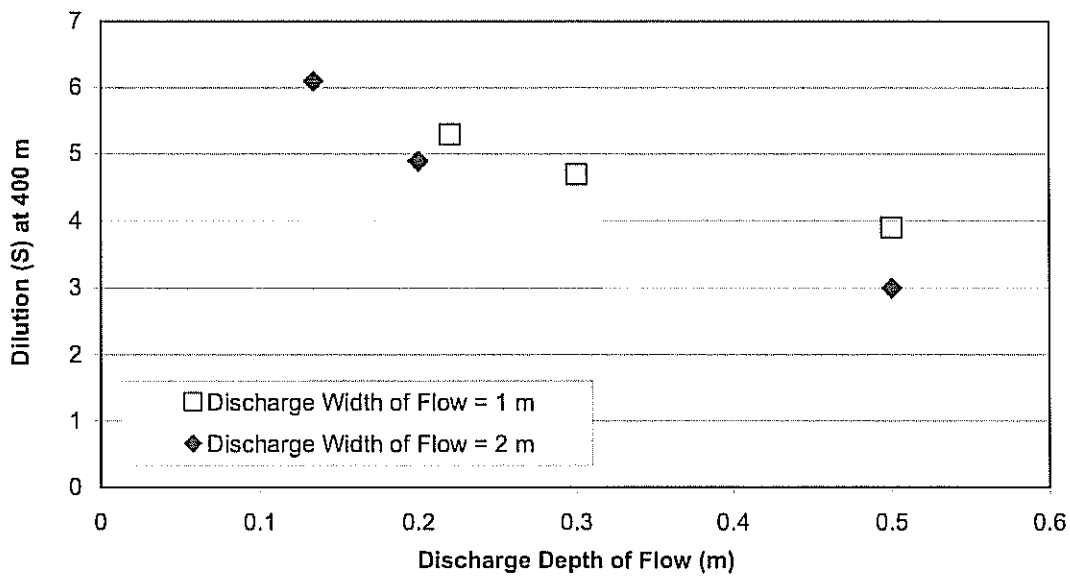

Figure 2. Base condition no. 2 sensitivity analysis for dilution (S) at 400 m for depth and width of discharge assumptions where river flowrate = 180 cfs and effluent flowrate = 31 cfs.

Discussion

The CORMIX model adequately describes mixing conditions at potential mixing zone boundaries for the proposed discharge to the San Joaquin River. The base condition scenarios can be used to conservatively represent mixing conditions and permit regulatory mixing zones that are consistent with SIP requirements for both human health CTR water quality criteria and the Basin Plan nitrate objective.

Although the human health mixing zone is approximately two miles long, this is only a small fraction of the total river reach, and only potential drinking water consumption on the eastern bank would be affected by the plume. This mixing zone does not extend into another mixing zone, contain any known drinking water intakes, or cause the conditions prohibited by the SIP.

A nitrate mixing zone extending 400 meters downstream is consistent with the SIP and would be easily monitored and verified under the NPDES Monitoring and Reporting Program. However, only a 11.7 meter mixing zone is necessary to achieve the required nitrate dilution (D = 1.8) to authorize the requested, more protective performance based effluent limitation. LWA evaluated key assumptions with a sensitivity analysis, and they do not significantly change the distance to complete mixing or the proposed nitrate effluent limitation.

EFFLUENT LIMITATION CALCULATION FOR DICHLOROBROMOMETHANE, CHLORODIBROMOMETHANE, AND CARBON TETRACHLORIDE

Fully mixed conditions consistent with the SIP dilution requirements for CTR human health water quality criteria occur less than two miles downstream from the proposed discharge. The calculated dilution for effluent limitation development (D = S-1, where D is the effluent limitation calculation upstream dilution and S is the CORMIX output downstream dilution) at this location is 20 (617 cfs/31 cfs). In addition to the mixing zone assessments, the City completed an ambient upstream low-level chlorination by-products characterization study.

There are no known drinking water intakes downstream prior to the Sacramento-San Joaquin River Delta at Vernalis (approximately 28 miles). With no established drinking water intakes in the two-mile mixing zone, long term and frequent drinking water use of the San Joaquin River at this location is highly unlikely.

The proposed CTR human health water quality criteria mixing zone does not cause any of the SIP prohibited conditions. The mixing zone is approximately one river mile upstream from West Main Bridge, and 3.5 miles upstream from the City of Modesto Water Quality Control Facility discharge locations. This proposed mixing zone does not impact aquatic life, cause a nuisance, overlap with another mixing zone or contain a known drinking water intake.

The City performed an upstream ambient disinfection byproduct low-level concentration study to better quantify available assimilative capacity. All previous upstream ambient San Joaquin River monitoring data was below detection limits. City field staff collected upstream samples on February 25, 2009 and April 15, 2009. The analytical laboratory performed a modified USEPA 524.2 method that uses a selected ion monitoring (SIM) procedure with gas chromatograph/mass spectrometry (GC/MS) analysis. Essentially, the SIM method targets limited predetermined ion ranges allowing higher scanning rates for these ranges. The instrument must first be calibrated to

the lower standard and the target ranges. The reporting limits using the SIM method are approximately three to five times lower than the method detection limit (MDL) for the standard method. All target chlorination byproducts concentrations were reported as "not detected" at a reporting limitation of 0.05 µg/L. A carbon tetrachloride result was not reported for the February 25, 2009 event as requested. All quality assurance (surrogate spikes, lab control spikes, and method blanks) and quality control (field blank and field duplicate) samples were within allowable ranges. The laboratory results for both events are provided as **Appendix D**; raw instrument data are available on request.

Based on the results of the mixing zone and low reporting limit studies, **Table 5** through **Table 7** report proposed modified effluent limitation calculations for chlorodibromomethane, dichlorobromomethane, and carbon tetrachloride. Because all historical samples were reported as "not detected," the lowest reporting limitation should be used for effluent limitation calculations (SIP section 1.4.3.2).

Table 5. Chlorodibromomethane Effluent Limitation Calculation

	Human Health
Criteria (µg/L)	0.41
Dilution Credit (D)	20:1
ECA	7.6
AMEL (µg/L)	7.6
MDEL/AMEL Multiplier	1.91
MDEL (µg/L)	14.5

Table 6. Dichlorobromomethane Effluent Limitation Calculation

	Human Health
Criteria (µg/L)	0.56
Dilution Credit (D)	20:1
ECA	10.8
AMEL (µg/L)	10.8
MDEL/AMEL Multiplier	1.45
MDEL (µg/L)	15.6

Table 7. Carbon Tetrachloride Effluent Limitation Calculation

	Human Health
Criteria (µg/L)	0.25
Dilution Credit (D)	20:1
ECA	4.3
AMEL (µg/L)	4.3
MDEL/AMEL Multiplier	2.87
MDEL (µg/L)	12.2

EFFLUENT LIMITATION CALCULATION FOR NITRATE

On behalf of the City, LWA previously prepared[4] a nitrate effluent limitation calculation that considered assimilative capacity. That memorandum did not specifically identify the size of the proposed nitrate mixing zone. Based on the modeling performed, the dilution (D) at the edge of a 400 meter mixing zone is 3.9. However, only a 11.7 meter mixing zone is required to reach the dilution at which the requested performance-based effluent limitation is more protective.

For the December 2008 memorandum, upstream nitrate as N data were not available, and downstream data from the City of Modesto were substituted. Two upstream data points are now available (1.19 mg/L, <0.5 mg/L), and per the SIP, the maximum ambient concentration value is used in the proposed effluent limitation calculation (see **Table 8**). To allow for future variability in the upstream nitrate concentration LWA recommends the 400 meter mixing zone. The requested mixing zone does not cause the any of the SIP prohibited conditions.

Currently, the City of Turlock effluent nitrate concentration averages 15.5 mg/L NO_3 as N with a standard deviation of 3.24 mg/L NO_3 as N. During the period, prior to plant nitrification (November 2001 to December 2004, n=62), the plant averaged 8.96 mg/L NO_3 as N with a standard deviation of 7.42 mg/L NO_3 as N. Although the average concentration has increased because of the new WQCF nitrification process, ammonia concentrations and nitrate concentration variability are much lower.

Table 8 summarizes the revised nitrate effluent limitation calculation based on the results of the mixing zone and upstream receiving water studies.

Table 8. Nitrate as N Effluent Limitation Calculation

	Human Health
Criteria (mg/L)	10
Dilution Credit	3.9:1
ECA	44.4
AMEL (mg/L)	44.4
MDEL/AMEL Multiplier	1.35
MDEL (mg/L)	59.9

As discussed in the December 2008 memorandum, an average monthly effluent limitation (AMEL) based on historical performance that is also achievable and more protective would be 26.2 mg/L NO_3 as N calculated as the observed effluent average (15.5 mg/L) plus 3.3 times the standard deviation (3.3 x 3.24 mg/L). As the City intends to maintain the performance of the existing nitrification treatment facilities, LWA recommends an AMEL of 26.2 mg/L NO_3 as N for the final effluent limitation. This proposed performance based AMEL is approximately the equivalent of a D=1.84 dilution (S=2.84). In the base case for 30Q10 river flow and the maximum permitted effluent flow, this dilution occurs in less than 11.7 meters (38 feet) from the proposed outfall.

[4] Laurenson, Brian, LWA, Memorandum to James Marshall, CVRWQCB, "Calculation of City of Turlock WQCF Nitrate Effluent Limitation Based on Available San Joaquin River Assimilative Capacity (NPDES NO. CA0078948)." Prepared on behalf of the City of Turlock, December 31, 2008.

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Appendix A – Proposed Outfall Design

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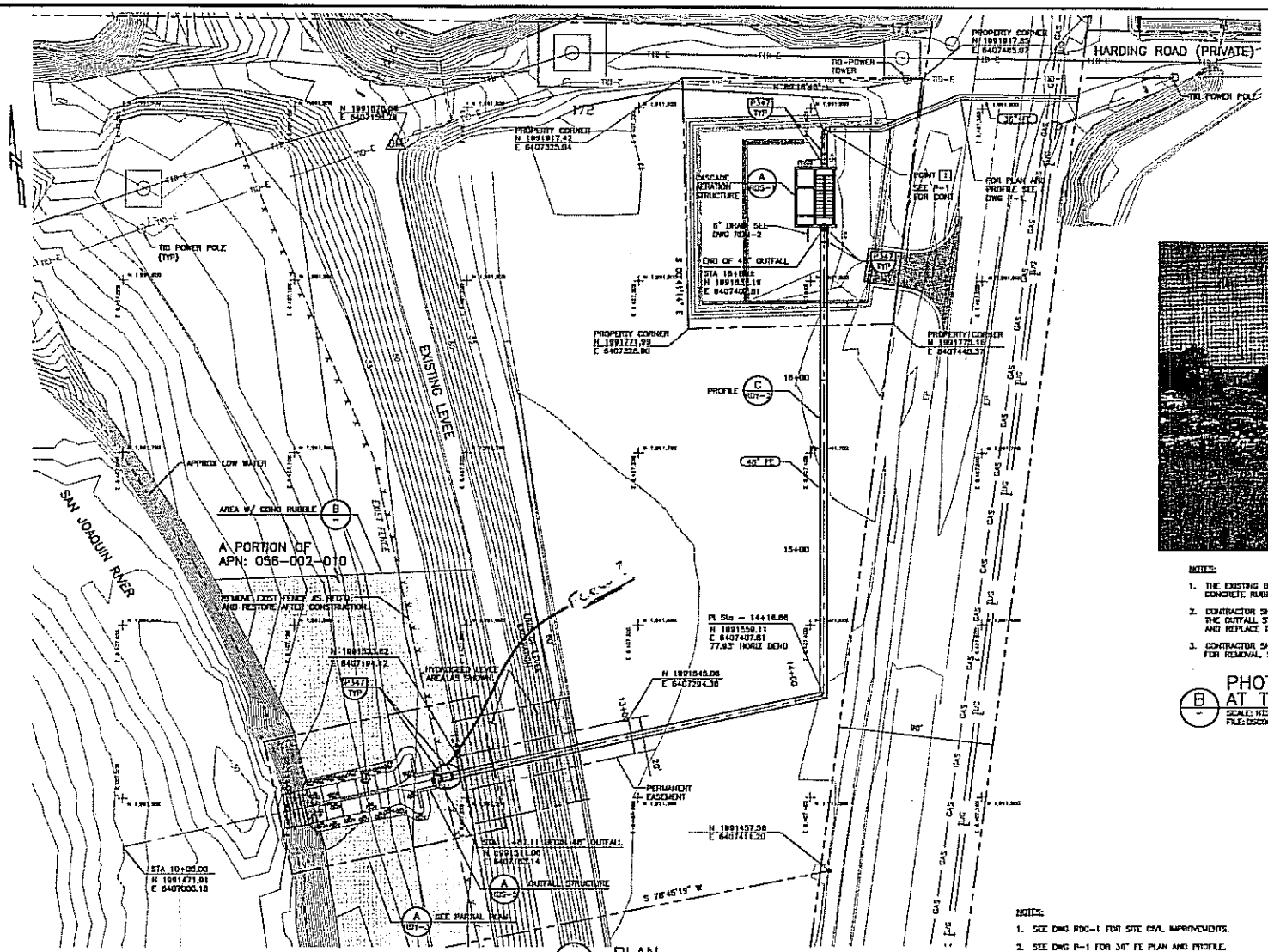

A PLAN
SCALE: 1" = 30'
FILE:

NOTES:

1. THE EXISTING BANK OF THE SAN JOAQUIN RIVER INCLUDES LARGE, BROKEN CONCRETE RUBBLE FOR RIVER BANK STABILIZATION. SEE PHOTO.
2. CONTRACTOR SHALL REMOVE THE CONCRETE RUBBLE AS NECESSARY TO INSTALL THE OUTFALL STRUCTURE PIPELINE AND LEVEE. STOCKPILE THE CONCRETE RUBBLE, AND REPLACE THE CONCRETE RUBBLE TO EXISTING CONDITIONS.
3. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND INCLUDE ALLOWANCE FOR REMOVAL, STOCKPILING AND REPLACEMENT WITH CONTRACT BID.

B PHOTO OF CONCRETE RUBBLE AT THE OUTFALL STRUCTURE SITE
SCALE: NTS
FILE: DSC06380.JPG

NOTES:

1. SEE DWG RDG-1 FOR SITE CIVIL IMPROVEMENTS.
2. SEE DWG P-1 FOR 36" FE PLAN AND PROFILE.

Call before you Dig
1-800-227-2600
UNDERGROUND SERVICE (USA)

REV	DATE	BY	DESCRIPTION

DESIGNED BA
DRAWN JCI
CHECKED WCL
DATE OCTOBER 2006

DISCIPLINE ENGINEER

PROJECT ENGINEER

PARTNER

carollo

STANISLAUS COUNTY, CALIFORNIA

HARDING DRAIN BYPASS
PUMP STATION AND PIPELINE
CIVIL
OUTFALL GRAVITY PIPELINE
SITE PLAN

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 69168.10
DRAWING NO. RDY-1
SHEET NO. 68 OF 114

AND DIGING UNDERGROUND UTILITY LINES. IT'S LEGAL.

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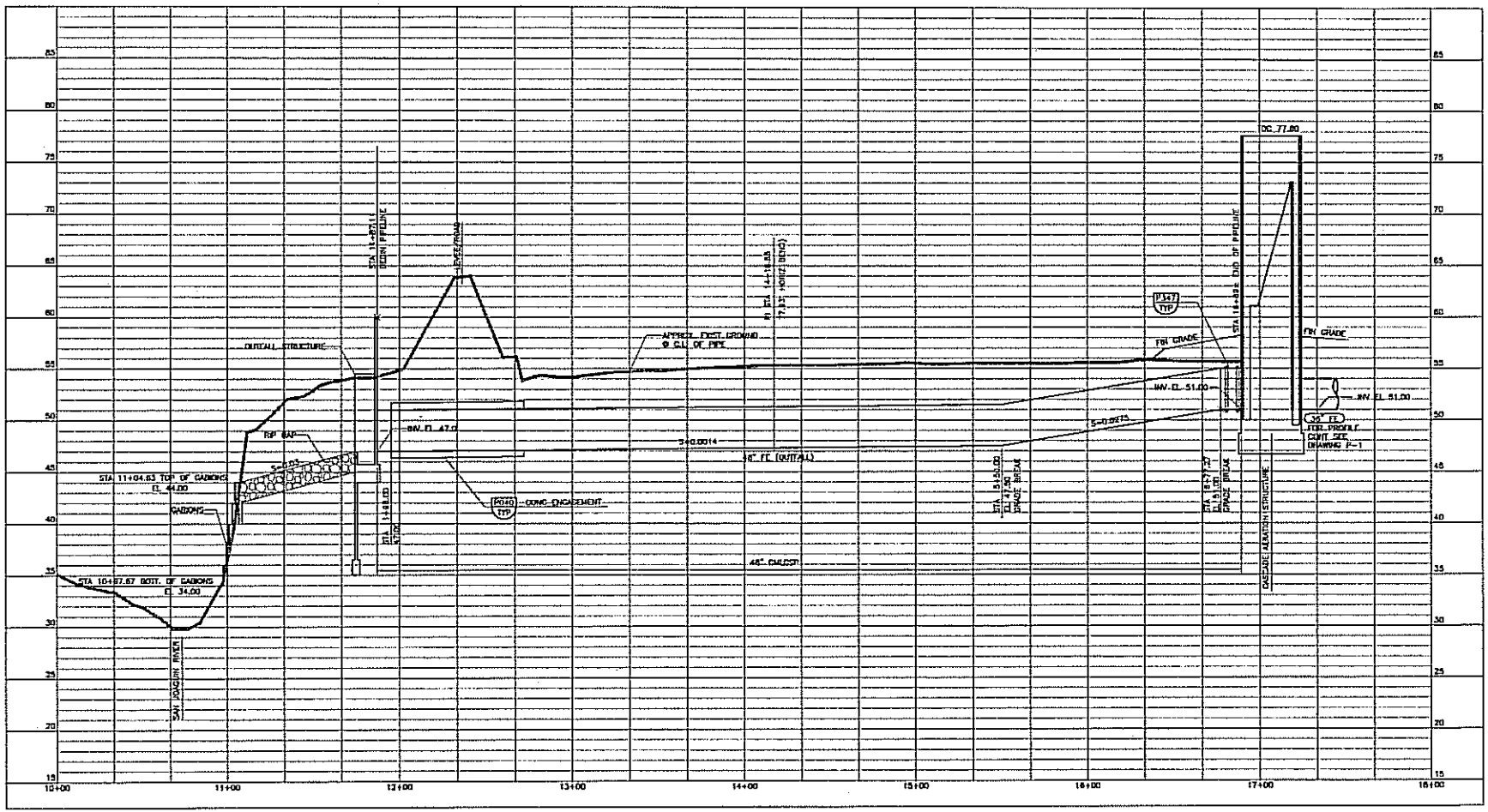

B RDY-1 OUTFALL PROFILE

SCALE: HORIZ. 1" = 30' : VERT. 1" = 5'

FILE: RCPRF002

REV	DATE	BY	DESCRIPTION

DESIGNED

DRAWN JCI

CHECKED

DATE AUGUST 2008

DISCIPLINE ENGINEER — PROFESSIONAL ENGINEER — No. E 65380 — Exp. 6/30/09 — CIVIL — STATE OF CALIFORNIA

PROJECT ENGINEER — PROFESSIONAL ENGINEER — No. C50193 — Exp. 6/30/09 — CIVIL — STATE OF CALIFORNIA

PARTNER — PROFESSIONAL ENGINEER — No. C0773 — Exp. 12/31/09 — CIVIL — STATE OF CALIFORNIA

carollo

CITY OF TURLOCK — STANISLAUS COUNTY, CALIFORNIA

HARDING DRAIN BYPASS

PUMP STATION AND PIPELINE

CIVIL

OUTFALL GRAVITY PIPELINE PROFILE

VERIFY SCALES — BAR IS ONE INCH ON ORIGINAL DRAWING — 0 1" — IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 69160.10

DRAWING NO. RDY-2

SHEET NO. 69 OF 114

FILENAME: C:\pw_working\prosecchiaa\ahaa\ahaa0416\R\Y-021002 8-27-08 DR:Grahm ALpaca SHEETS: rcpr1002; G-BOR; misc BEIG; BKA TurnerLaqua

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

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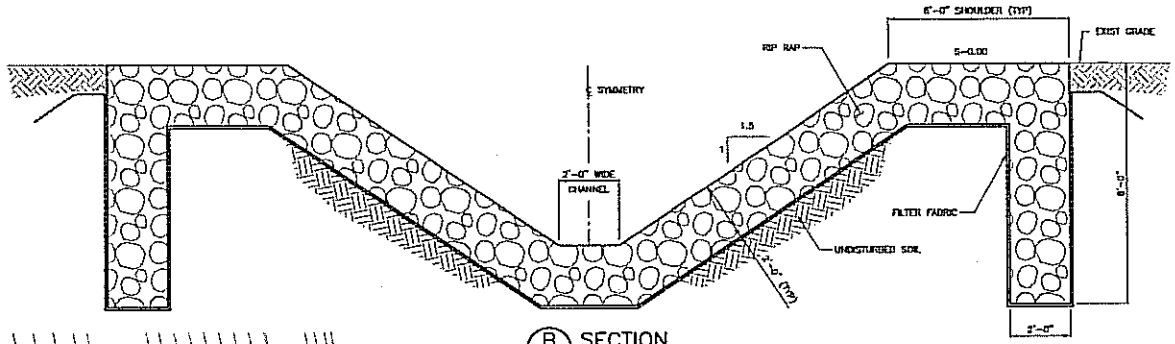
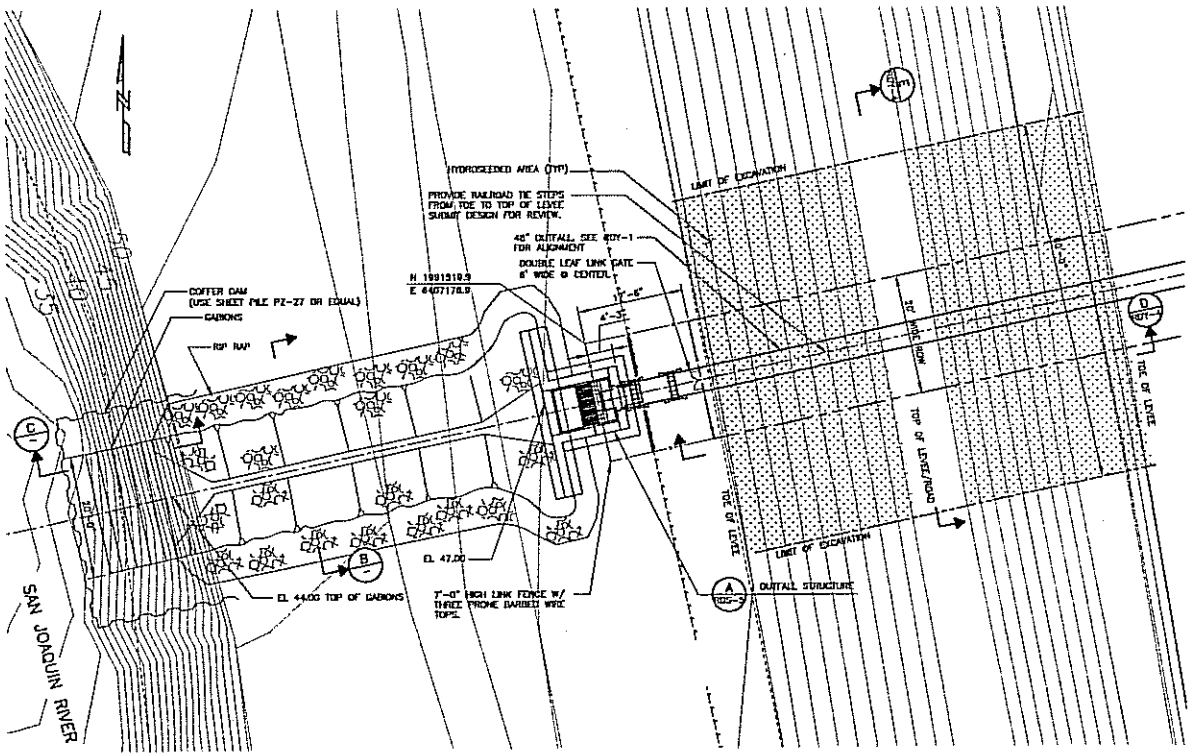
1-800-227-2600

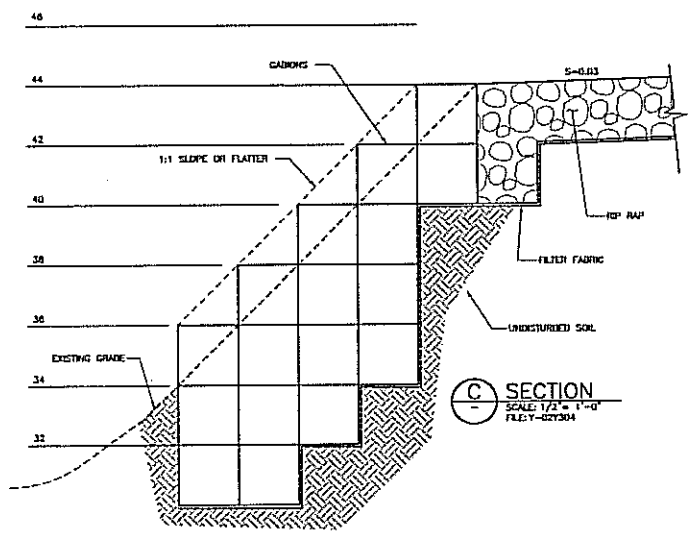
UNDERGROUND SERVICE (USA)



B SECTION
SCALE: 1/2" = 1'-0"
FILE:Y-02Y302



A PARTIAL PLAN
SCALE: 1" = 10'
FILE:Y02Y100



C SECTION
SCALE: 1/2" = 1'-0"
FILE:Y-02Y304

REV	DATE	BY	DESCRIPTION

DESIGNED
DRAWN JCI
CHECKED
DATE AUGUST 2006

DISCIPLINE ENGINEER — REGISTERED PROFESSIONAL ENGINEER — No. C 62380 — CIVIL — STATE OF CALIFORNIA

PROJECT ENGINEER — REGISTERED PROFESSIONAL ENGINEER — No. C37162 — CIVIL — STATE OF CALIFORNIA

PARTNER — REGISTERED PROFESSIONAL ENGINEER — No. C37723 — CIVIL — STATE OF CALIFORNIA

carollo

TURLOCK — STANISLAUS COUNTY, CALIFORNIA

HARDING DRAIN BYPASS
PUMP STATION AND PIPELINE
CIVIL
OUTFALL GRAVITY PIPELINE
PARTIAL PLAN AND SECTIONS

VERIFY SCALES — BAR IS ONE INCH ON ORIGINAL DRAWING 0 — 1" — IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 69188.10
DRAWING NO. RDY-3
SHEET NO. 70 OF 114

FILENAME: C:\pw_working\carollodata\admin\d0458\Y-02Y303 8-27-06 09:31am 46.dwg BASE: D-BDR; Y-02Y100; Outfall_align; UTILITY; HEATED: Y-02Y302; Y-02Y304; S-025101; Misc BDR; BMA; Y-02Y100 Turnout.dwg

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Appendix B – Base Scenario Model Output

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MODEL OUTPUT: BASE SCENARIO n. 1

```
CORMIX SESSION REPORT:
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                        CORMIX MIXING ZONE EXPERT SYSTEM
                            CORMIX Version 5.0GT
                         HYDRO3:Version-5.0.2.0  October,2008
SITE NAME/LABEL:                Turlock
  DESIGN CASE:
  FILE NAME:                    \\Dav-nas\pub\01 Employee
Folders\LauraF\Turlock\Turlock Base Case 180cfs 20mgd.prd
  Using subsystem CORMIX3:     Buoyant Surface Discharges
  Start of session:             06/10/2009--15:00:41
*****************************************************************************
SUMMARY OF INPUT DATA:
-----------------------------------------------------------------------------
AMBIENT PARAMETERS:
  Cross-section                          = bounded
  Width                           BS     = 30.48 m
  Channel regularity              ICHREG = 3
  Ambient flowrate                QA     = 5.10 m^3/s
  Average depth                   HA     = 0.57 m
  Depth at discharge              HD     = 0.57 m
  Ambient velocity                UA     = 0.2950 m/s
  Darcy-Weisbach friction factor  F      = 0.1032
    Calculated from Manning's n          = 0.033
  Wind velocity                   UW     = 0.1 m/s
  Stratification Type             STRCND = U
  Surface temperature                    = 20 degC
  Bottom temperature                     = 20 degC
  Calculated FRESH-WATER DENSITY values:
  Surface density                 RHOAS  = 998.2051 kg/m^3
  Bottom density                  RHOAB  = 998.2051 kg/m^3
-----------------------------------------------------------------------------
DISCHARGE PARAMETERS:             Surface Discharge
  Discharge located on                   = right bank/shoreline
  Discharge configuration                = flush discharge
  Distance from bank to outlet    DISTB  = 0 m
  Discharge angle                 SIGMA  = 90 deg
  Depth near discharge outlet     HD0    = 0.57 m
  Bottom slope at discharge       SLOPE  = 0 deg
  Rectangular discharge:
    Discharge cross-section area  A0     = 0.4 m^2
    Discharge channel width       B0     = 2 m
    Discharge channel depth       H0     = 0.2 m
    Discharge aspect ratio        AR     = 0.1
  Discharge flowrate              Q0     = 0.876253 m^3/s
  Discharge velocity              U0     = 2.19 m/s
  Discharge temperature (freshwater)     = 20 degC
  Corresponding density           RHO0   = 998.2051 kg/m^3
  Density difference              DRHO   = 0 kg/m^3
  Buoyant acceleration            GP0    = 0 m/s^2
  Discharge concentration         C0     = 100 mg/l
  Surface heat exchange coeff.    KS     = 0 m/s
  Coefficient of decay            KD     = 0 /s
```

```
-----------------------------------------------------------------------------
DISCHARGE/ENVIRONMENT LENGTH SCALES:
  LQ  = 0.63 m          Lm  = 4.70 m          Lbb = 0 m
  LM  = 99999 m
-----------------------------------------------------------------------------
NON-DIMENSIONAL PARAMETERS:
  Densimetric Froude number       FR0    = 99999 (based on LQ)
  Channel densimetric Froude no.  FRCH   = 99999 (based on H0)
  Velocity ratio                  R      = 7.43
-----------------------------------------------------------------------------
MIXING ZONE / TOXIC DILUTION ZONE / AREA OF INTEREST PARAMETERS:
  Toxic discharge                          = no
  Water quality standard specified         = yes
  Water quality standard          CSTD     = 20 mg/l
  Regulatory mixing zone                   = yes
  Regulatory mixing zone specification     = distance
  Regulatory mixing zone value             = 400 m (m^2 if area)
  Region of interest                       = 5000 m
*****************************************************************************
HYDRODYNAMIC CLASSIFICATION:
  *-------------------------*
  | FLOW CLASS   = SA2 |
  *-------------------------*
*****************************************************************************
MIXING ZONE EVALUATION (hydrodynamic and regulatory summary):

-----------------------------------------------------------------------------
X-Y-Z Coordinate system:
Origin is located at water surface and at centerline of discharge channel:
    0 m from the right bank/shore.
  Number of display steps NSTEP = 800 per module.
-----------------------------------------------------------------------------
NEAR-FIELD REGION (NFR) CONDITIONS :
Note: The NFR is the zone of strong initial mixing.  It has no regulatory
  implication.  However, this information may be useful for the discharge
  designer because the mixing in the NFR is usually sensitive to the
  discharge design conditions.
  Pollutant concentration at NFR edge  c = 21.515700 mg/l
  Dilution at edge of NFR              s = 4.6
  NFR Location:                        x = 125.09 m
    (centerline coordinates)           y = 6.32 m
                                       z = 0 m
  NFR plume dimensions:  half-width (bh) = 5.69 m
                          thickness (bv) = 0.57 m
Cumulative travel time:       307.0214 sec.
-----------------------------------------------------------------------------
Buoyancy assessment:
  The effluent density is equal or about about equal to the surrounding
  ambient water density at the discharge level.
  Therefore, the effluent behaves essentially as NEUTRALLY BUOYANT.
-----------------------------------------------------------------------------
FAR-FIELD MIXING SUMMARY:
  Plume becomes vertically fully mixed ALREADY IN NEAR-FIELD at 131.18 m
  downstream and continues as vertically mixed into the far-field.
  Plume becomes laterally fully mixed at 3004.19 m
  downstream.
-----------------------------------------------------------------------------
```

```
PLUME BANK CONTACT SUMMARY:
  Plume in bounded section contacts one bank only at 0 m downstream.
************************ TOXIC DILUTION ZONE SUMMARY ************************
No TDZ was specified for this simulation.
********************** REGULATORY MIXING ZONE SUMMARY **********************
The plume conditions at the boundary of the specified RMZ are as follows:
  Pollutant concentration              c = 20.422518  mg/l
  Corresponding dilution               s = 4.9
  Plume location:                      x = 400 m
    (centerline coordinates)           y = 0 m
                                       z = 0 m
  Plume dimensions:      half-width (bh) = 21.89 m
                          thickness (bv) = 0.57 m
Cumulative travel time:       1102.3083 sec.
At this position, the plume is CONTACTING the RIGHT bank.
However, the specified water quality standard has not been met
  within the RMZ. In particular:
The ambient water quality standard was encountered at the following
  plume position:
  Water quality standard                 = 20  mg/l
  Corresponding dilution               s = 5
  Plume location:                      x = 518.53 m
    (centerline coordinates)           y = 0 m
                                       z = 0 m
  Plume dimensions:      half-width (bh) = 22.36 m
                          thickness (bv) = 0.57 m
********************** FINAL DESIGN ADVICE AND COMMENTS **********************
REMINDER:  The user must take note that HYDRODYNAMIC MODELING by any known
  technique is NOT AN EXACT SCIENCE.
Extensive comparison with field and laboratory data has shown that the
  CORMIX predictions on dilutions and concentrations (with associated
  plume geometries) are reliable for the majority of cases and are accurate
  to within about +-50% (standard deviation).
As a further safeguard, CORMIX will not give predictions whenever it judges
  the design configuration as highly complex and uncertain for prediction.
```

```
CORMIX3 PREDICTION FILE:
3333333333333333333333333333333333333333333333333333333333333333333333333333
                        CORMIX MIXING ZONE EXPERT SYSTEM
                 Subsystem CORMIX3:   Buoyant Surface Discharges
                          CORMIX Version 5.0GT
                       HYDRO3 Version 5.0.2.0 October 2008
-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
CASE DESCRIPTION
 Site name/label:   Turlock
 Design case:
 FILE NAME:         \\D...LauraF\Turlock\Turlock_Base_Case_180cfs_20mgd.prd
 Time stamp:        Tue Apr 14 15:48:03 2009

ENVIRONMENT PARAMETERS (metric units)
 Bounded section
 BS     =      30.48  AS     =      17.28  QA     =       5.10  ICHREG= 3
 HA     =       0.57  HD     =       0.57
 UA     =      0.295  F      =      0.103 USTAR =0.3350E-01
 UW     =      0.100 UWSTAR=0.1046E-03
 Uniform density environment
 STRCND=  U          RHOAM =  998.2051

DISCHARGE PARAMETERS (metric units)
 BANK   =  RIGHT     DISTB =       0.00  Configuration: flush_discharge
 SIGMA =      90.00  HDO    =       0.57  SLOPE =     0.00 deg.
 Rectangular channel geometry:
 B0     =      2.000 H0     =      0.200 A0     =0.4000E+00  AR     =       0.100
 U0     =      2.191 Q0     =      0.876        =0.8763E+00
 RHO0   =  998.2051  DRHO0 =0.0000E+00  GP0    =0.0000E+00
 C0     =0.1000E+03  CUNITS=  mg/l
 IPOLL =  1          KS     =0.0000E+00  KD     =0.0000E+00

FLUX VARIABLES (metric units)
 Q0     =0.8763E+00  M0     =0.1920E+01  J0     =0.0000E+00
 Associated length scales (meters)
 LQ     =       0.63  LM     =  99999.00  Lm     =       4.70  Lb     =       0.00
 LQ2D   =       0.71  LM2D   =  99999.00  Lm2D   =      38.92

NON-DIMENSIONAL PARAMETERS
 FR0    =  99999.00  FRCH   =  99999.00  R      =       7.43

FLOW CLASSIFICATION
 3333333333333333333333333333333333333333333
 3  Flow class (CORMIX3)       =    SA2     3
 3  Applicable layer depth HS =      0.57  3
 3333333333333333333333333333333333333333333

MIXING ZONE / TOXIC DILUTION / REGION OF INTEREST PARAMETERS
 C0     =0.1000E+03  CUNITS=  mg/l
 NTOX   =  0
 NSTD   =  1         CSTD   =0.2000E+02
 REGMZ =  1
 REGSPC=  1          XREG   =    400.00  WREG   =       0.00  AREG   =       0.00
 XINT   =   5000.00  XMAX   =   5000.00

X-Y-Z COORDINATE SYSTEM:
```

```
    ORIGIN is located at the WATER SURFACE and at center of discharge
      channel/outlet:      0.00 m  from the RIGHT bank/shore.
    X-axis points downstream
    Y-axis points to left as seen by an observer looking downstream
    Z-axis points vertically upward (in CORMIX3, all values Z = 0.00)
NSTEP = 800 display intervals per module
-------------------------------------------------------------------------
-------------------------------------------------------------------------
BEGIN MOD301: DISCHARGE MODULE

 Efflux conditions:
      X        Y        Z        S        C        BV       BH
     0.00     0.00     0.00     1.0 0.100E+03    0.20     1.00

END OF MOD301: DISCHARGE MODULE
-------------------------------------------------------------------------
-------------------------------------------------------------------------
BEGIN MOD302: ZONE OF FLOW ESTABLISHMENT

  Control volume inflow:
      X        Y        Z        S        C        BV       BH
     0.00     0.00     0.00     1.0 0.100E+03    0.20     1.00

 Profile definitions:
   BV = Gaussian 1/e (37%) vertical thickness
   BH = Gaussian 1/e (37%) horizontal half-width, normal to trajectory
   S = hydrodynamic centerline dilution
   C = centerline concentration (includes reaction effects, if any)

  Control volume outflow:                                  SIGMAE=     87.71
      X        Y        Z        S        C        BV       BH
     0.02     0.66     0.00     1.0 0.100E+03    0.34     1.07
 Cumulative travel time =          0.3011 sec

END OF MOD302: ZONE OF FLOW ESTABLISHMENT
-------------------------------------------------------------------------
-------------------------------------------------------------------------
BEGIN CORSURF (MOD310): BUOYANT SURFACE JET - NEAR-FIELD REGION

 Surface jet in shallow crossflow with shoreline-attachment.

 Profile definitions:
   BV = Gaussian 1/e (37%) vertical thickness
   BH = Gaussian 1/e (37%) horizontal half-width, normal to trajectory
   S = hydrodynamic centerline dilution
   C = centerline concentration (includes reaction effects, if any)

      X        Y        Z        S        C        BV       BH
     0.02     0.66     0.00     1.0 0.100E+03    0.34     1.07
     0.16     1.50     0.00     1.4 0.728E+02    0.46     1.47
     0.21     1.96     0.00     1.5 0.676E+02    0.50     1.57
     0.28     2.43     0.00     1.6 0.630E+02    0.53     1.68
     0.37     2.89     0.00     1.7 0.590E+02    0.56     1.78
  Jet/plume becomes VERTICALLY FULLY MIXED over the local ambient water depth.
     BV = water depth (vertically mixed)
     0.47     3.35     0.00     1.8 0.554E+02    0.60     1.89
     0.47     3.35     0.00     1.8 0.554E+02    0.57     1.89
```

0.60	3.80	0.00	1.9	0.534E+02	0.57	1.92
0.76	4.24	0.00	1.9	0.518E+02	0.57	1.95
0.95	4.67	0.00	2.0	0.503E+02	0.57	1.98
1.16	5.09	0.00	2.0	0.491E+02	0.57	2.01
1.41	5.49	0.00	2.1	0.480E+02	0.57	2.05
1.67	5.88	0.00	2.1	0.470E+02	0.57	2.08
1.96	6.25	0.00	2.2	0.461E+02	0.57	2.11
2.27	6.60	0.00	2.2	0.452E+02	0.57	2.14
2.59	6.94	0.00	2.2	0.445E+02	0.57	2.17
2.93	7.27	0.00	2.3	0.438E+02	0.57	2.20
3.28	7.58	0.00	2.3	0.431E+02	0.57	2.23
3.65	7.88	0.00	2.4	0.425E+02	0.57	2.26
4.02	8.16	0.00	2.4	0.420E+02	0.57	2.29
4.41	8.43	0.00	2.4	0.415E+02	0.57	2.32
4.80	8.69	0.00	2.4	0.410E+02	0.57	2.35
5.20	8.94	0.00	2.5	0.405E+02	0.57	2.38
5.60	9.18	0.00	2.5	0.401E+02	0.57	2.41
6.01	9.41	0.00	2.5	0.396E+02	0.57	2.44
6.43	9.62	0.00	2.5	0.393E+02	0.57	2.47
6.85	9.83	0.00	2.6	0.389E+02	0.57	2.50
7.27	10.04	0.00	2.6	0.385E+02	0.57	2.52
7.70	10.23	0.00	2.6	0.382E+02	0.57	2.55
8.13	10.42	0.00	2.6	0.378E+02	0.57	2.58
8.56	10.60	0.00	2.7	0.375E+02	0.57	2.61
9.00	10.77	0.00	2.7	0.372E+02	0.57	2.63
9.44	10.94	0.00	2.7	0.369E+02	0.57	2.66
9.88	11.10	0.00	2.7	0.367E+02	0.57	2.69
10.32	11.25	0.00	2.7	0.364E+02	0.57	2.71
10.77	11.40	0.00	2.8	0.361E+02	0.57	2.74
11.22	11.55	0.00	2.8	0.359E+02	0.57	2.77
11.66	11.69	0.00	2.8	0.356E+02	0.57	2.79
12.11	11.82	0.00	2.8	0.354E+02	0.57	2.82
12.56	11.96	0.00	2.8	0.352E+02	0.57	2.84
13.02	12.08	0.00	2.9	0.350E+02	0.57	2.87
13.47	12.21	0.00	2.9	0.347E+02	0.57	2.89
13.92	12.33	0.00	2.9	0.345E+02	0.57	2.92
14.38	12.44	0.00	2.9	0.343E+02	0.57	2.94
14.83	12.56	0.00	2.9	0.341E+02	0.57	2.97
15.29	12.66	0.00	2.9	0.339E+02	0.57	2.99
15.75	12.77	0.00	3.0	0.338E+02	0.57	3.02
16.21	12.87	0.00	3.0	0.336E+02	0.57	3.04
16.67	12.97	0.00	3.0	0.334E+02	0.57	3.06
17.13	13.07	0.00	3.0	0.332E+02	0.57	3.09
17.59	13.16	0.00	3.0	0.331E+02	0.57	3.11
18.05	13.26	0.00	3.0	0.329E+02	0.57	3.13
18.51	13.35	0.00	3.1	0.328E+02	0.57	3.16
18.97	13.43	0.00	3.1	0.326E+02	0.57	3.18
19.43	13.52	0.00	3.1	0.324E+02	0.57	3.20
19.89	13.60	0.00	3.1	0.323E+02	0.57	3.23
20.36	13.68	0.00	3.1	0.322E+02	0.57	3.25
20.82	13.76	0.00	3.1	0.320E+02	0.57	3.27
21.28	13.83	0.00	3.1	0.319E+02	0.57	3.29
21.75	13.91	0.00	3.2	0.317E+02	0.57	3.31
22.21	13.98	0.00	3.2	0.316E+02	0.57	3.34
22.68	14.05	0.00	3.2	0.315E+02	0.57	3.36
23.14	14.12	0.00	3.2	0.314E+02	0.57	3.38
23.61	14.18	0.00	3.2	0.312E+02	0.57	3.40

24.07	14.25	0.00	3.2	0.311E+02	0.57	3.42
24.54	14.31	0.00	3.2	0.310E+02	0.57	3.44
25.00	14.37	0.00	3.2	0.309E+02	0.57	3.46
25.47	14.43	0.00	3.3	0.308E+02	0.57	3.48
25.93	14.49	0.00	3.3	0.306E+02	0.57	3.50
26.40	14.55	0.00	3.3	0.305E+02	0.57	3.52
26.87	14.60	0.00	3.3	0.304E+02	0.57	3.54
27.33	14.65	0.00	3.3	0.303E+02	0.57	3.56
27.80	14.71	0.00	3.3	0.302E+02	0.57	3.58
28.27	14.76	0.00	3.3	0.301E+02	0.57	3.60
28.73	14.81	0.00	3.3	0.300E+02	0.57	3.62
29.20	14.85	0.00	3.3	0.299E+02	0.57	3.64
29.67	14.90	0.00	3.4	0.298E+02	0.57	3.66
30.14	14.95	0.00	3.4	0.297E+02	0.57	3.68
30.60	14.99	0.00	3.4	0.296E+02	0.57	3.70
31.07	15.03	0.00	3.4	0.295E+02	0.57	3.72
31.54	15.07	0.00	3.4	0.294E+02	0.57	3.73
32.01	15.12	0.00	3.4	0.293E+02	0.57	3.75
32.48	15.15	0.00	3.4	0.292E+02	0.57	3.77
32.94	15.19	0.00	3.4	0.292E+02	0.57	3.79
33.41	15.23	0.00	3.4	0.291E+02	0.57	3.81
33.88	15.27	0.00	3.4	0.290E+02	0.57	3.82
34.35	15.30	0.00	3.5	0.289E+02	0.57	3.84
34.82	15.33	0.00	3.5	0.288E+02	0.57	3.86
35.29	15.37	0.00	3.5	0.287E+02	0.57	3.88
35.75	15.40	0.00	3.5	0.287E+02	0.57	3.89
36.22	15.43	0.00	3.5	0.286E+02	0.57	3.91
36.69	15.46	0.00	3.5	0.285E+02	0.57	3.93
37.16	15.49	0.00	3.5	0.284E+02	0.57	3.95
37.63	15.52	0.00	3.5	0.283E+02	0.57	3.96
38.10	15.54	0.00	3.5	0.283E+02	0.57	3.98
38.57	15.57	0.00	3.5	0.282E+02	0.57	4.00
39.04	15.59	0.00	3.6	0.281E+02	0.57	4.01
39.51	15.62	0.00	3.6	0.281E+02	0.57	4.03
39.98	15.64	0.00	3.6	0.280E+02	0.57	4.04
40.44	15.66	0.00	3.6	0.279E+02	0.57	4.06
40.91	15.68	0.00	3.6	0.278E+02	0.57	4.08
41.38	15.70	0.00	3.6	0.278E+02	0.57	4.09
41.85	15.72	0.00	3.6	0.277E+02	0.57	4.11
42.32	15.74	0.00	3.6	0.276E+02	0.57	4.12
42.79	15.76	0.00	3.6	0.276E+02	0.57	4.14
43.26	15.77	0.00	3.6	0.275E+02	0.57	4.15
43.73	15.79	0.00	3.6	0.274E+02	0.57	4.17
44.20	15.80	0.00	3.7	0.274E+02	0.57	4.18
44.67	15.82	0.00	3.7	0.273E+02	0.57	4.20
45.14	15.83	0.00	3.7	0.272E+02	0.57	4.21
45.61	15.84	0.00	3.7	0.272E+02	0.57	4.23
46.08	15.85	0.00	3.7	0.271E+02	0.57	4.24
46.55	15.87	0.00	3.7	0.271E+02	0.57	4.26
47.02	15.87	0.00	3.7	0.270E+02	0.57	4.27
47.49	15.88	0.00	3.7	0.269E+02	0.57	4.28
47.96	15.89	0.00	3.7	0.269E+02	0.57	4.30
48.43	15.90	0.00	3.7	0.268E+02	0.57	4.31
48.90	15.91	0.00	3.7	0.268E+02	0.57	4.33
49.36	15.91	0.00	3.7	0.267E+02	0.57	4.34
49.83	15.92	0.00	3.8	0.267E+02	0.57	4.35
50.30	15.92	0.00	3.8	0.266E+02	0.57	4.37

50.77	15.92	0.00	3.8	0.265E+02	0.57	4.38
51.24	15.93	0.00	3.8	0.265E+02	0.57	4.39
51.71	15.93	0.00	3.8	0.264E+02	0.57	4.41
52.18	15.93	0.00	3.8	0.264E+02	0.57	4.42

Maximum lateral extent of recirculation bubble.

52.65	15.93	0.00	3.8	0.263E+02	0.57	4.43
53.12	15.93	0.00	3.8	0.263E+02	0.57	4.45
53.59	15.93	0.00	3.8	0.262E+02	0.57	4.46
54.06	15.92	0.00	3.8	0.262E+02	0.57	4.47
54.53	15.92	0.00	3.8	0.261E+02	0.57	4.48
55.00	15.92	0.00	3.8	0.261E+02	0.57	4.50
55.47	15.91	0.00	3.8	0.260E+02	0.57	4.51
55.94	15.91	0.00	3.8	0.260E+02	0.57	4.52
56.41	15.90	0.00	3.9	0.259E+02	0.57	4.53
56.88	15.89	0.00	3.9	0.259E+02	0.57	4.55
57.35	15.88	0.00	3.9	0.258E+02	0.57	4.56
57.82	15.87	0.00	3.9	0.258E+02	0.57	4.57
58.29	15.86	0.00	3.9	0.257E+02	0.57	4.58
58.76	15.85	0.00	3.9	0.257E+02	0.57	4.59
59.23	15.84	0.00	3.9	0.256E+02	0.57	4.61
59.70	15.83	0.00	3.9	0.256E+02	0.57	4.62
60.17	15.82	0.00	3.9	0.256E+02	0.57	4.63
60.64	15.80	0.00	3.9	0.255E+02	0.57	4.64
61.11	15.79	0.00	3.9	0.255E+02	0.57	4.65
61.58	15.77	0.00	3.9	0.254E+02	0.57	4.66
62.04	15.76	0.00	3.9	0.254E+02	0.57	4.67
62.51	15.74	0.00	3.9	0.253E+02	0.57	4.68
62.98	15.72	0.00	4.0	0.253E+02	0.57	4.70
63.45	15.71	0.00	4.0	0.252E+02	0.57	4.71
63.92	15.69	0.00	4.0	0.252E+02	0.57	4.72
64.39	15.67	0.00	4.0	0.252E+02	0.57	4.73
64.86	15.64	0.00	4.0	0.251E+02	0.57	4.74
65.33	15.62	0.00	4.0	0.251E+02	0.57	4.75
65.80	15.60	0.00	4.0	0.250E+02	0.57	4.76
66.27	15.58	0.00	4.0	0.250E+02	0.57	4.77
66.74	15.55	0.00	4.0	0.250E+02	0.57	4.78
67.21	15.53	0.00	4.0	0.249E+02	0.57	4.79
67.68	15.50	0.00	4.0	0.249E+02	0.57	4.80
68.14	15.48	0.00	4.0	0.248E+02	0.57	4.81
68.61	15.45	0.00	4.0	0.248E+02	0.57	4.82
69.08	15.42	0.00	4.0	0.248E+02	0.57	4.83
69.55	15.39	0.00	4.0	0.247E+02	0.57	4.84
70.02	15.36	0.00	4.1	0.247E+02	0.57	4.85
70.49	15.33	0.00	4.1	0.246E+02	0.57	4.86
70.96	15.30	0.00	4.1	0.246E+02	0.57	4.87
71.43	15.27	0.00	4.1	0.246E+02	0.57	4.88
71.89	15.24	0.00	4.1	0.245E+02	0.57	4.89
72.36	15.20	0.00	4.1	0.245E+02	0.57	4.90
72.83	15.17	0.00	4.1	0.245E+02	0.57	4.91
73.30	15.13	0.00	4.1	0.244E+02	0.57	4.92
73.77	15.10	0.00	4.1	0.244E+02	0.57	4.93
74.24	15.06	0.00	4.1	0.244E+02	0.57	4.94
74.70	15.02	0.00	4.1	0.243E+02	0.57	4.95
75.17	14.98	0.00	4.1	0.243E+02	0.57	4.96
75.64	14.94	0.00	4.1	0.242E+02	0.57	4.96
76.11	14.90	0.00	4.1	0.242E+02	0.57	4.97
76.58	14.86	0.00	4.1	0.242E+02	0.57	4.98

77.04	14.82	0.00	4.1	0.241E+02	0.57	4.99
77.51	14.78	0.00	4.1	0.241E+02	0.57	5.00
77.98	14.74	0.00	4.2	0.241E+02	0.57	5.01
78.45	14.69	0.00	4.2	0.240E+02	0.57	5.02
78.92	14.65	0.00	4.2	0.240E+02	0.57	5.03
79.38	14.60	0.00	4.2	0.240E+02	0.57	5.04
79.85	14.56	0.00	4.2	0.239E+02	0.57	5.04
80.32	14.51	0.00	4.2	0.239E+02	0.57	5.05
80.78	14.46	0.00	4.2	0.239E+02	0.57	5.06
81.25	14.41	0.00	4.2	0.238E+02	0.57	5.07
81.72	14.36	0.00	4.2	0.238E+02	0.57	5.08
82.19	14.31	0.00	4.2	0.238E+02	0.57	5.09
82.65	14.26	0.00	4.2	0.238E+02	0.57	5.09
83.12	14.21	0.00	4.2	0.237E+02	0.57	5.10
83.59	14.16	0.00	4.2	0.237E+02	0.57	5.11
84.05	14.10	0.00	4.2	0.237E+02	0.57	5.12
84.52	14.05	0.00	4.2	0.236E+02	0.57	5.13
84.99	14.00	0.00	4.2	0.236E+02	0.57	5.13
85.45	13.94	0.00	4.2	0.236E+02	0.57	5.14
85.92	13.88	0.00	4.2	0.235E+02	0.57	5.15
86.39	13.83	0.00	4.3	0.235E+02	0.57	5.16
86.85	13.77	0.00	4.3	0.235E+02	0.57	5.17
87.32	13.71	0.00	4.3	0.235E+02	0.57	5.17
87.78	13.65	0.00	4.3	0.234E+02	0.57	5.18
88.25	13.59	0.00	4.3	0.234E+02	0.57	5.19
88.71	13.53	0.00	4.3	0.234E+02	0.57	5.20
89.18	13.47	0.00	4.3	0.233E+02	0.57	5.20
89.65	13.40	0.00	4.3	0.233E+02	0.57	5.21
90.11	13.34	0.00	4.3	0.233E+02	0.57	5.22
90.58	13.28	0.00	4.3	0.232E+02	0.57	5.23
91.04	13.21	0.00	4.3	0.232E+02	0.57	5.23
91.51	13.15	0.00	4.3	0.232E+02	0.57	5.24
91.97	13.08	0.00	4.3	0.232E+02	0.57	5.25
92.44	13.01	0.00	4.3	0.231E+02	0.57	5.26
92.90	12.94	0.00	4.3	0.231E+02	0.57	5.26
93.37	12.88	0.00	4.3	0.231E+02	0.57	5.27
93.83	12.81	0.00	4.3	0.231E+02	0.57	5.28
94.29	12.74	0.00	4.3	0.230E+02	0.57	5.28
94.76	12.66	0.00	4.3	0.230E+02	0.57	5.29
95.22	12.59	0.00	4.4	0.230E+02	0.57	5.30
95.69	12.52	0.00	4.4	0.229E+02	0.57	5.30
96.15	12.45	0.00	4.4	0.229E+02	0.57	5.31
96.62	12.37	0.00	4.4	0.229E+02	0.57	5.32
97.08	12.30	0.00	4.4	0.229E+02	0.57	5.33
97.54	12.22	0.00	4.4	0.228E+02	0.57	5.33
98.01	12.15	0.00	4.4	0.228E+02	0.57	5.34
98.47	12.07	0.00	4.4	0.228E+02	0.57	5.35
98.93	11.99	0.00	4.4	0.228E+02	0.57	5.35
99.40	11.91	0.00	4.4	0.227E+02	0.57	5.36
99.86	11.83	0.00	4.4	0.227E+02	0.57	5.37
100.32	11.75	0.00	4.4	0.227E+02	0.57	5.37
100.78	11.67	0.00	4.4	0.227E+02	0.57	5.38
101.25	11.59	0.00	4.4	0.226E+02	0.57	5.39
101.71	11.51	0.00	4.4	0.226E+02	0.57	5.39
102.17	11.42	0.00	4.4	0.226E+02	0.57	5.40
102.63	11.34	0.00	4.4	0.226E+02	0.57	5.40
103.10	11.25	0.00	4.4	0.225E+02	0.57	5.41

103.56	11.17	0.00	4.4	0.225E+02	0.57	5.42
104.02	11.08	0.00	4.4	0.225E+02	0.57	5.42
104.48	10.99	0.00	4.4	0.225E+02	0.57	5.43
104.94	10.91	0.00	4.5	0.224E+02	0.57	5.44
105.40	10.82	0.00	4.5	0.224E+02	0.57	5.44
105.86	10.73	0.00	4.5	0.224E+02	0.57	5.45
106.32	10.64	0.00	4.5	0.224E+02	0.57	5.46
106.79	10.55	0.00	4.5	0.224E+02	0.57	5.46
107.25	10.46	0.00	4.5	0.223E+02	0.57	5.47
107.71	10.36	0.00	4.5	0.223E+02	0.57	5.47
108.17	10.27	0.00	4.5	0.223E+02	0.57	5.48
108.63	10.18	0.00	4.5	0.223E+02	0.57	5.49
109.09	10.08	0.00	4.5	0.222E+02	0.57	5.49
109.55	9.99	0.00	4.5	0.222E+02	0.57	5.50
110.01	9.89	0.00	4.5	0.222E+02	0.57	5.50
110.47	9.80	0.00	4.5	0.222E+02	0.57	5.51
110.93	9.70	0.00	4.5	0.222E+02	0.57	5.52
111.39	9.60	0.00	4.5	0.221E+02	0.57	5.52
111.85	9.50	0.00	4.5	0.221E+02	0.57	5.53
112.30	9.40	0.00	4.5	0.221E+02	0.57	5.53
112.76	9.30	0.00	4.5	0.221E+02	0.57	5.54
113.22	9.20	0.00	4.5	0.220E+02	0.57	5.55
113.68	9.10	0.00	4.5	0.220E+02	0.57	5.55
114.14	8.99	0.00	4.5	0.220E+02	0.57	5.56
114.60	8.89	0.00	4.5	0.220E+02	0.57	5.56
115.05	8.79	0.00	4.6	0.220E+02	0.57	5.57
115.51	8.68	0.00	4.6	0.219E+02	0.57	5.57
115.97	8.58	0.00	4.6	0.219E+02	0.57	5.58
116.43	8.47	0.00	4.6	0.219E+02	0.57	5.59
116.89	8.36	0.00	4.6	0.219E+02	0.57	5.59
117.34	8.26	0.00	4.6	0.219E+02	0.57	5.60
117.80	8.15	0.00	4.6	0.218E+02	0.57	5.60
118.26	8.04	0.00	4.6	0.218E+02	0.57	5.61
118.71	7.93	0.00	4.6	0.218E+02	0.57	5.61
119.17	7.82	0.00	4.6	0.218E+02	0.57	5.62
119.63	7.71	0.00	4.6	0.218E+02	0.57	5.62
120.08	7.59	0.00	4.6	0.217E+02	0.57	5.63
120.54	7.48	0.00	4.6	0.217E+02	0.57	5.64
120.99	7.37	0.00	4.6	0.217E+02	0.57	5.64
121.45	7.25	0.00	4.6	0.217E+02	0.57	5.65
121.90	7.14	0.00	4.6	0.217E+02	0.57	5.65
122.36	7.02	0.00	4.6	0.216E+02	0.57	5.66
122.82	6.91	0.00	4.6	0.216E+02	0.57	5.66
123.27	6.79	0.00	4.6	0.216E+02	0.57	5.67
123.72	6.67	0.00	4.6	0.216E+02	0.57	5.67
124.18	6.55	0.00	4.6	0.216E+02	0.57	5.68
124.63	6.44	0.00	4.6	0.215E+02	0.57	5.68
125.09	6.32	0.00	4.6	0.215E+02	0.57	5.69

```
 End of RECIRCULATION BUBBLE for shoreline-attached jet motion.
   Dilution in recirculation bubble =     4.8
   Corresponding concentration      =     0.210E+02
 Cumulative travel time =          307.0214 sec

END OF CORSURF (MOD310): BUOYANT SURFACE JET - NEAR-FIELD REGION
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-----------------------------------------------------------------------------
** End of NEAR-FIELD REGION (NFR) **
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The initial plume WIDTH/THICKNESS VALUE in the next far-field module will be CORRECTED by a factor 1.83 to conserve the mass flux in the far-field!
The correction factor is quite large because of the small ambient velocity relative to the strong mixing characteristics of the discharge!
This indicates localized RECIRCULATION REGIONS and internal hydraulic JUMPS.

Some bank/shore interaction occurs at end of near-field.

In the next prediction module, the jet/plume centerline will be set to follow the bank/shore.

BEGIN MOD341: BUOYANT AMBIENT SPREADING

Plume is ATTACHED to RIGHT bank/shore.
Plume width is now determined from RIGHT bank/shore.

Plume condition is non-buoyant or weakly buoyant, or, at the end of the NFR it is governed by full vertical mixing over the ambient depth, or by complete lateral mixing over the channel width.
Thus, the BUOYANT SPREADING REGIME is ABSENT.

END OF MOD341: BUOYANT AMBIENT SPREADING

BEGIN MOD361: PASSIVE AMBIENT MIXING IN UNIFORM AMBIENT

Vertical diffusivity (initial value) = 0.380E-02 m^2/s
Horizontal diffusivity (initial value) = 0.190E-01 m^2/s

Profile definitions:
BV = Gaussian s.d.*sqrt(pi/2) (46%) thickness, measured vertically
= or equal to water depth, if fully mixed
BH = Gaussian s.d.*sqrt(pi/2) (46%) half-width, measured horizontally in Y-direction
S = hydrodynamic centerline dilution
C = centerline concentration (includes reaction effects, if any)

Plume Stage 2 (bank attached):

X	Y	Z	S	C	BV	BH
125.09	0.00	0.00	4.6	0.215E+02	0.57	20.78

Plume interacts with BOTTOM.
The passive diffusion plume becomes VERTICALLY FULLY MIXED within this prediction interval.

131.18	-0.00	0.00	4.7	0.215E+02	0.57	20.81
137.27	-0.00	0.00	4.7	0.215E+02	0.57	20.83
143.37	-0.00	0.00	4.7	0.214E+02	0.57	20.86
149.46	-0.00	0.00	4.7	0.214E+02	0.57	20.88
155.56	-0.00	0.00	4.7	0.214E+02	0.57	20.91
161.65	-0.00	0.00	4.7	0.214E+02	0.57	20.93
167.74	-0.00	0.00	4.7	0.213E+02	0.57	20.96
173.84	-0.00	0.00	4.7	0.213E+02	0.57	20.98
179.93	-0.00	0.00	4.7	0.213E+02	0.57	21.01
186.02	-0.00	0.00	4.7	0.213E+02	0.57	21.03
192.12	-0.00	0.00	4.7	0.212E+02	0.57	21.06
198.21	-0.00	0.00	4.7	0.212E+02	0.57	21.08

204.31	-0.00	0.00	4.7	0.212E+02	0.57	21.11
210.40	-0.00	0.00	4.7	0.212E+02	0.57	21.13
216.49	-0.00	0.00	4.7	0.211E+02	0.57	21.16
222.59	-0.00	0.00	4.7	0.211E+02	0.57	21.18
228.68	-0.00	0.00	4.7	0.211E+02	0.57	21.21
234.77	-0.00	0.00	4.7	0.211E+02	0.57	21.23
240.87	-0.00	0.00	4.8	0.210E+02	0.57	21.26
246.96	-0.00	0.00	4.8	0.210E+02	0.57	21.28
253.05	-0.00	0.00	4.8	0.210E+02	0.57	21.31
259.15	-0.00	0.00	4.8	0.210E+02	0.57	21.33
265.24	-0.00	0.00	4.8	0.209E+02	0.57	21.36
271.34	-0.00	0.00	4.8	0.209E+02	0.57	21.38
277.43	-0.00	0.00	4.8	0.209E+02	0.57	21.41
283.52	-0.00	0.00	4.8	0.209E+02	0.57	21.43
289.62	-0.00	0.00	4.8	0.208E+02	0.57	21.45
295.71	-0.00	0.00	4.8	0.208E+02	0.57	21.48
301.80	-0.00	0.00	4.8	0.208E+02	0.57	21.50
307.90	-0.00	0.00	4.8	0.208E+02	0.57	21.53
313.99	-0.00	0.00	4.8	0.207E+02	0.57	21.55
320.08	-0.00	0.00	4.8	0.207E+02	0.57	21.58
326.18	-0.00	0.00	4.8	0.207E+02	0.57	21.60
332.27	-0.00	0.00	4.8	0.207E+02	0.57	21.63
338.36	-0.00	0.00	4.8	0.207E+02	0.57	21.65
344.46	-0.00	0.00	4.8	0.206E+02	0.57	21.67
350.55	-0.00	0.00	4.9	0.206E+02	0.57	21.70
356.65	-0.00	0.00	4.9	0.206E+02	0.57	21.72
362.74	-0.00	0.00	4.9	0.206E+02	0.57	21.75
368.83	-0.00	0.00	4.9	0.205E+02	0.57	21.77
374.93	-0.00	0.00	4.9	0.205E+02	0.57	21.79
381.02	-0.00	0.00	4.9	0.205E+02	0.57	21.82
387.11	-0.00	0.00	4.9	0.205E+02	0.57	21.84
393.21	-0.00	0.00	4.9	0.204E+02	0.57	21.87
399.30	-0.00	0.00	4.9	0.204E+02	0.57	21.89

** REGULATORY MIXING ZONE BOUNDARY **
In this prediction interval the plume DOWNSTREAM distance meets or exceeds the regulatory value = 400.00 m.
This is the extent of the REGULATORY MIXING ZONE.

405.39	-0.00	0.00	4.9	0.204E+02	0.57	21.92
411.49	-0.00	0.00	4.9	0.204E+02	0.57	21.94
417.58	-0.00	0.00	4.9	0.204E+02	0.57	21.96
423.68	-0.00	0.00	4.9	0.203E+02	0.57	21.99
429.77	-0.00	0.00	4.9	0.203E+02	0.57	22.01
435.86	-0.00	0.00	4.9	0.203E+02	0.57	22.03
441.96	-0.00	0.00	4.9	0.203E+02	0.57	22.06
448.05	-0.00	0.00	4.9	0.202E+02	0.57	22.08
454.14	-0.00	0.00	4.9	0.202E+02	0.57	22.11
460.24	-0.00	0.00	4.9	0.202E+02	0.57	22.13
466.33	-0.00	0.00	5.0	0.202E+02	0.57	22.15
472.42	-0.00	0.00	5.0	0.202E+02	0.57	22.18
478.52	-0.00	0.00	5.0	0.201E+02	0.57	22.20
484.61	-0.00	0.00	5.0	0.201E+02	0.57	22.23
490.71	-0.00	0.00	5.0	0.201E+02	0.57	22.25
496.80	-0.00	0.00	5.0	0.201E+02	0.57	22.27
502.89	-0.00	0.00	5.0	0.201E+02	0.57	22.30
508.99	-0.00	0.00	5.0	0.200E+02	0.57	22.32
515.08	-0.00	0.00	5.0	0.200E+02	0.57	22.34

** WATER QUALITY STANDARD OR CCC HAS BEEN FOUND **

The pollutant concentration in the plume falls below water quality standard or CCC value of 0.200E+02 in the current prediction interval.
This is the spatial extent of concentrations exceeding the water quality standard or CCC value.

521.17	0.00	0.00	5.0	0.200E+02	0.57	22.37
527.27	-0.00	0.00	5.0	0.200E+02	0.57	22.39
533.36	-0.00	0.00	5.0	0.199E+02	0.57	22.41
539.45	-0.00	0.00	5.0	0.199E+02	0.57	22.44
545.55	-0.00	0.00	5.0	0.199E+02	0.57	22.46
551.64	-0.00	0.00	5.0	0.199E+02	0.57	22.48
557.74	-0.00	0.00	5.0	0.199E+02	0.57	22.51
563.83	-0.00	0.00	5.0	0.198E+02	0.57	22.53
569.92	-0.00	0.00	5.0	0.198E+02	0.57	22.55
576.02	-0.00	0.00	5.0	0.198E+02	0.57	22.58
582.11	-0.00	0.00	5.1	0.198E+02	0.57	22.60
588.20	-0.00	0.00	5.1	0.198E+02	0.57	22.62
594.30	-0.00	0.00	5.1	0.197E+02	0.57	22.65
600.39	-0.00	0.00	5.1	0.197E+02	0.57	22.67
606.48	-0.00	0.00	5.1	0.197E+02	0.57	22.69
612.58	-0.00	0.00	5.1	0.197E+02	0.57	22.72
618.67	-0.00	0.00	5.1	0.197E+02	0.57	22.74
624.77	-0.00	0.00	5.1	0.196E+02	0.57	22.76
630.86	-0.00	0.00	5.1	0.196E+02	0.57	22.79
636.95	-0.00	0.00	5.1	0.196E+02	0.57	22.81
643.05	-0.00	0.00	5.1	0.196E+02	0.57	22.83
649.14	-0.00	0.00	5.1	0.196E+02	0.57	22.86
655.23	-0.00	0.00	5.1	0.195E+02	0.57	22.88
661.33	-0.00	0.00	5.1	0.195E+02	0.57	22.90
667.42	-0.00	0.00	5.1	0.195E+02	0.57	22.92
673.51	-0.00	0.00	5.1	0.195E+02	0.57	22.95
679.61	-0.00	0.00	5.1	0.195E+02	0.57	22.97
685.70	-0.00	0.00	5.1	0.194E+02	0.57	22.99
691.80	-0.00	0.00	5.1	0.194E+02	0.57	23.02
697.89	-0.00	0.00	5.2	0.194E+02	0.57	23.04
703.98	-0.00	0.00	5.2	0.194E+02	0.57	23.06
710.08	-0.00	0.00	5.2	0.194E+02	0.57	23.08
716.17	-0.00	0.00	5.2	0.194E+02	0.57	23.11
722.26	-0.00	0.00	5.2	0.193E+02	0.57	23.13
728.36	-0.00	0.00	5.2	0.193E+02	0.57	23.15
734.45	-0.00	0.00	5.2	0.193E+02	0.57	23.18
740.54	-0.00	0.00	5.2	0.193E+02	0.57	23.20
746.64	-0.00	0.00	5.2	0.193E+02	0.57	23.22
752.73	-0.00	0.00	5.2	0.192E+02	0.57	23.24
758.83	-0.00	0.00	5.2	0.192E+02	0.57	23.27
764.92	-0.00	0.00	5.2	0.192E+02	0.57	23.29
771.01	-0.00	0.00	5.2	0.192E+02	0.57	23.31
777.11	-0.00	0.00	5.2	0.192E+02	0.57	23.33
783.20	-0.00	0.00	5.2	0.191E+02	0.57	23.36
789.29	-0.00	0.00	5.2	0.191E+02	0.57	23.38
795.39	-0.00	0.00	5.2	0.191E+02	0.57	23.40
801.48	-0.00	0.00	5.2	0.191E+02	0.57	23.42
807.57	-0.00	0.00	5.2	0.191E+02	0.57	23.45
813.67	-0.00	0.00	5.2	0.191E+02	0.57	23.47
819.76	-0.00	0.00	5.3	0.190E+02	0.57	23.49
825.86	-0.00	0.00	5.3	0.190E+02	0.57	23.51
831.95	-0.00	0.00	5.3	0.190E+02	0.57	23.54
838.04	-0.00	0.00	5.3	0.190E+02	0.57	23.56

844.14	-0.00	0.00	5.3	0.190E+02	0.57	23.58
850.23	-0.00	0.00	5.3	0.189E+02	0.57	23.60
856.32	-0.00	0.00	5.3	0.189E+02	0.57	23.62
862.42	-0.00	0.00	5.3	0.189E+02	0.57	23.65
868.51	-0.00	0.00	5.3	0.189E+02	0.57	23.67
874.60	-0.00	0.00	5.3	0.189E+02	0.57	23.69
880.70	-0.00	0.00	5.3	0.189E+02	0.57	23.71
886.79	-0.00	0.00	5.3	0.188E+02	0.57	23.74
892.89	-0.00	0.00	5.3	0.188E+02	0.57	23.76
898.98	-0.00	0.00	5.3	0.188E+02	0.57	23.78
905.07	-0.00	0.00	5.3	0.188E+02	0.57	23.80
911.17	-0.00	0.00	5.3	0.188E+02	0.57	23.82
917.26	-0.00	0.00	5.3	0.188E+02	0.57	23.85
923.35	-0.00	0.00	5.3	0.187E+02	0.57	23.87
929.45	-0.00	0.00	5.3	0.187E+02	0.57	23.89
935.54	-0.00	0.00	5.3	0.187E+02	0.57	23.91
941.63	-0.00	0.00	5.4	0.187E+02	0.57	23.93
947.73	-0.00	0.00	5.4	0.187E+02	0.57	23.96
953.82	-0.00	0.00	5.4	0.186E+02	0.57	23.98
959.92	-0.00	0.00	5.4	0.186E+02	0.57	24.00
966.01	-0.00	0.00	5.4	0.186E+02	0.57	24.02
972.10	-0.00	0.00	5.4	0.186E+02	0.57	24.04
978.20	-0.00	0.00	5.4	0.186E+02	0.57	24.07
984.29	-0.00	0.00	5.4	0.186E+02	0.57	24.09
990.38	-0.00	0.00	5.4	0.185E+02	0.57	24.11
996.48	-0.00	0.00	5.4	0.185E+02	0.57	24.13
1002.57	-0.00	0.00	5.4	0.185E+02	0.57	24.15
1008.66	-0.00	0.00	5.4	0.185E+02	0.57	24.18
1014.76	-0.00	0.00	5.4	0.185E+02	0.57	24.20
1020.85	-0.00	0.00	5.4	0.185E+02	0.57	24.22
1026.94	-0.00	0.00	5.4	0.184E+02	0.57	24.24
1033.04	-0.00	0.00	5.4	0.184E+02	0.57	24.26
1039.13	-0.00	0.00	5.4	0.184E+02	0.57	24.28
1045.23	-0.00	0.00	5.4	0.184E+02	0.57	24.31
1051.32	-0.00	0.00	5.4	0.184E+02	0.57	24.33
1057.41	-0.00	0.00	5.4	0.184E+02	0.57	24.35
1063.51	-0.00	0.00	5.5	0.183E+02	0.57	24.37
1069.60	-0.00	0.00	5.5	0.183E+02	0.57	24.39
1075.69	-0.00	0.00	5.5	0.183E+02	0.57	24.41
1081.79	-0.00	0.00	5.5	0.183E+02	0.57	24.44
1087.88	-0.00	0.00	5.5	0.183E+02	0.57	24.46
1093.97	-0.00	0.00	5.5	0.183E+02	0.57	24.48
1100.07	-0.00	0.00	5.5	0.183E+02	0.57	24.50
1106.16	-0.00	0.00	5.5	0.182E+02	0.57	24.52
1112.26	-0.00	0.00	5.5	0.182E+02	0.57	24.54
1118.35	-0.00	0.00	5.5	0.182E+02	0.57	24.56
1124.44	-0.00	0.00	5.5	0.182E+02	0.57	24.59
1130.54	-0.00	0.00	5.5	0.182E+02	0.57	24.61
1136.63	-0.00	0.00	5.5	0.182E+02	0.57	24.63
1142.72	-0.00	0.00	5.5	0.181E+02	0.57	24.65
1148.82	-0.00	0.00	5.5	0.181E+02	0.57	24.67
1154.91	-0.00	0.00	5.5	0.181E+02	0.57	24.69
1161.00	-0.00	0.00	5.5	0.181E+02	0.57	24.71
1167.10	-0.00	0.00	5.5	0.181E+02	0.57	24.73
1173.19	-0.00	0.00	5.5	0.181E+02	0.57	24.76
1179.29	-0.00	0.00	5.5	0.180E+02	0.57	24.78
1185.38	-0.00	0.00	5.5	0.180E+02	0.57	24.80

1191.47	-0.00	0.00	5.6	0.180E+02	0.57	24.82
1197.57	-0.00	0.00	5.6	0.180E+02	0.57	24.84
1203.66	-0.00	0.00	5.6	0.180E+02	0.57	24.86
1209.75	-0.00	0.00	5.6	0.180E+02	0.57	24.88
1215.85	-0.00	0.00	5.6	0.180E+02	0.57	24.90
1221.94	-0.00	0.00	5.6	0.179E+02	0.57	24.93
1228.03	-0.00	0.00	5.6	0.179E+02	0.57	24.95
1234.13	-0.00	0.00	5.6	0.179E+02	0.57	24.97
1240.22	-0.00	0.00	5.6	0.179E+02	0.57	24.99
1246.32	-0.00	0.00	5.6	0.179E+02	0.57	25.01
1252.41	-0.00	0.00	5.6	0.179E+02	0.57	25.03
1258.50	-0.00	0.00	5.6	0.178E+02	0.57	25.05
1264.60	-0.00	0.00	5.6	0.178E+02	0.57	25.07
1270.69	-0.00	0.00	5.6	0.178E+02	0.57	25.09
1276.78	-0.00	0.00	5.6	0.178E+02	0.57	25.11
1282.88	-0.00	0.00	5.6	0.178E+02	0.57	25.14
1288.97	-0.00	0.00	5.6	0.178E+02	0.57	25.16
1295.06	-0.00	0.00	5.6	0.178E+02	0.57	25.18
1301.16	-0.00	0.00	5.6	0.177E+02	0.57	25.20
1307.25	-0.00	0.00	5.6	0.177E+02	0.57	25.22
1313.35	-0.00	0.00	5.6	0.177E+02	0.57	25.24
1319.44	-0.00	0.00	5.6	0.177E+02	0.57	25.26
1325.53	-0.00	0.00	5.7	0.177E+02	0.57	25.28
1331.63	-0.00	0.00	5.7	0.177E+02	0.57	25.30
1337.72	-0.00	0.00	5.7	0.177E+02	0.57	25.32
1343.81	-0.00	0.00	5.7	0.176E+02	0.57	25.34
1349.91	-0.00	0.00	5.7	0.176E+02	0.57	25.36
1356.00	-0.00	0.00	5.7	0.176E+02	0.57	25.39
1362.09	-0.00	0.00	5.7	0.176E+02	0.57	25.41
1368.19	-0.00	0.00	5.7	0.176E+02	0.57	25.43
1374.28	-0.00	0.00	5.7	0.176E+02	0.57	25.45
1380.38	-0.00	0.00	5.7	0.176E+02	0.57	25.47
1386.47	-0.00	0.00	5.7	0.175E+02	0.57	25.49
1392.56	-0.00	0.00	5.7	0.175E+02	0.57	25.51
1398.66	-0.00	0.00	5.7	0.175E+02	0.57	25.53
1404.75	-0.00	0.00	5.7	0.175E+02	0.57	25.55
1410.84	-0.00	0.00	5.7	0.175E+02	0.57	25.57
1416.94	-0.00	0.00	5.7	0.175E+02	0.57	25.59
1423.03	-0.00	0.00	5.7	0.175E+02	0.57	25.61
1429.12	-0.00	0.00	5.7	0.174E+02	0.57	25.63
1435.22	-0.00	0.00	5.7	0.174E+02	0.57	25.65
1441.31	-0.00	0.00	5.7	0.174E+02	0.57	25.67
1447.41	-0.00	0.00	5.7	0.174E+02	0.57	25.69
1453.50	-0.00	0.00	5.8	0.174E+02	0.57	25.71
1459.59	-0.00	0.00	5.8	0.174E+02	0.57	25.74
1465.69	-0.00	0.00	5.8	0.174E+02	0.57	25.76
1471.78	-0.00	0.00	5.8	0.173E+02	0.57	25.78
1477.87	-0.00	0.00	5.8	0.173E+02	0.57	25.80
1483.97	-0.00	0.00	5.8	0.173E+02	0.57	25.82
1490.06	-0.00	0.00	5.8	0.173E+02	0.57	25.84
1496.15	-0.00	0.00	5.8	0.173E+02	0.57	25.86
1502.25	-0.00	0.00	5.8	0.173E+02	0.57	25.88
1508.34	-0.00	0.00	5.8	0.173E+02	0.57	25.90
1514.44	-0.00	0.00	5.8	0.173E+02	0.57	25.92
1520.53	-0.00	0.00	5.8	0.172E+02	0.57	25.94
1526.62	-0.00	0.00	5.8	0.172E+02	0.57	25.96
1532.72	-0.00	0.00	5.8	0.172E+02	0.57	25.98

1538.81	-0.00	0.00	5.8	0.172E+02	0.57	26.00
1544.90	-0.00	0.00	5.8	0.172E+02	0.57	26.02
1551.00	-0.00	0.00	5.8	0.172E+02	0.57	26.04
1557.09	-0.00	0.00	5.8	0.172E+02	0.57	26.06
1563.18	-0.00	0.00	5.8	0.171E+02	0.57	26.08
1569.28	-0.00	0.00	5.8	0.171E+02	0.57	26.10
1575.37	-0.00	0.00	5.8	0.171E+02	0.57	26.12
1581.47	-0.00	0.00	5.8	0.171E+02	0.57	26.14
1587.56	-0.00	0.00	5.9	0.171E+02	0.57	26.16
1593.65	-0.00	0.00	5.9	0.171E+02	0.57	26.18
1599.75	-0.00	0.00	5.9	0.171E+02	0.57	26.20
1605.84	-0.00	0.00	5.9	0.171E+02	0.57	26.22
1611.93	-0.00	0.00	5.9	0.170E+02	0.57	26.24
1618.03	-0.00	0.00	5.9	0.170E+02	0.57	26.26
1624.12	-0.00	0.00	5.9	0.170E+02	0.57	26.28
1630.21	-0.00	0.00	5.9	0.170E+02	0.57	26.30
1636.31	-0.00	0.00	5.9	0.170E+02	0.57	26.32
1642.40	-0.00	0.00	5.9	0.170E+02	0.57	26.34
1648.49	-0.00	0.00	5.9	0.170E+02	0.57	26.36
1654.59	-0.00	0.00	5.9	0.169E+02	0.57	26.38
1660.68	-0.00	0.00	5.9	0.169E+02	0.57	26.40
1666.78	-0.00	0.00	5.9	0.169E+02	0.57	26.42
1672.87	-0.00	0.00	5.9	0.169E+02	0.57	26.44
1678.96	-0.00	0.00	5.9	0.169E+02	0.57	26.46
1685.06	-0.00	0.00	5.9	0.169E+02	0.57	26.48
1691.15	-0.00	0.00	5.9	0.169E+02	0.57	26.50
1697.24	-0.00	0.00	5.9	0.169E+02	0.57	26.52
1703.34	-0.00	0.00	5.9	0.168E+02	0.57	26.54
1709.43	-0.00	0.00	5.9	0.168E+02	0.57	26.56
1715.52	-0.00	0.00	5.9	0.168E+02	0.57	26.58
1721.62	-0.00	0.00	5.9	0.168E+02	0.57	26.60
1727.71	-0.00	0.00	6.0	0.168E+02	0.57	26.62
1733.81	-0.00	0.00	6.0	0.168E+02	0.57	26.64
1739.90	-0.00	0.00	6.0	0.168E+02	0.57	26.66
1745.99	-0.00	0.00	6.0	0.168E+02	0.57	26.68
1752.09	-0.00	0.00	6.0	0.167E+02	0.57	26.70
1758.18	-0.00	0.00	6.0	0.167E+02	0.57	26.72
1764.27	-0.00	0.00	6.0	0.167E+02	0.57	26.74
1770.37	-0.00	0.00	6.0	0.167E+02	0.57	26.76
1776.46	-0.00	0.00	6.0	0.167E+02	0.57	26.78
1782.55	-0.00	0.00	6.0	0.167E+02	0.57	26.80
1788.65	-0.00	0.00	6.0	0.167E+02	0.57	26.82
1794.74	-0.00	0.00	6.0	0.167E+02	0.57	26.84
1800.84	-0.00	0.00	6.0	0.166E+02	0.57	26.86
1806.93	-0.00	0.00	6.0	0.166E+02	0.57	26.88
1813.02	-0.00	0.00	6.0	0.166E+02	0.57	26.89
1819.12	-0.00	0.00	6.0	0.166E+02	0.57	26.91
1825.21	-0.00	0.00	6.0	0.166E+02	0.57	26.93
1831.30	-0.00	0.00	6.0	0.166E+02	0.57	26.95
1837.40	-0.00	0.00	6.0	0.166E+02	0.57	26.97
1843.49	-0.00	0.00	6.0	0.166E+02	0.57	26.99
1849.58	-0.00	0.00	6.0	0.166E+02	0.57	27.01
1855.68	-0.00	0.00	6.0	0.165E+02	0.57	27.03
1861.77	-0.00	0.00	6.0	0.165E+02	0.57	27.05
1867.87	-0.00	0.00	6.1	0.165E+02	0.57	27.07
1873.96	-0.00	0.00	6.1	0.165E+02	0.57	27.09
1880.05	-0.00	0.00	6.1	0.165E+02	0.57	27.11

1886.15	-0.00	0.00	6.1	0.165E+02	0.57	27.13
1892.24	-0.00	0.00	6.1	0.165E+02	0.57	27.15
1898.33	-0.00	0.00	6.1	0.165E+02	0.57	27.17
1904.43	-0.00	0.00	6.1	0.164E+02	0.57	27.19
1910.52	-0.00	0.00	6.1	0.164E+02	0.57	27.21
1916.61	-0.00	0.00	6.1	0.164E+02	0.57	27.23
1922.71	-0.00	0.00	6.1	0.164E+02	0.57	27.24
1928.80	-0.00	0.00	6.1	0.164E+02	0.57	27.26
1934.90	-0.00	0.00	6.1	0.164E+02	0.57	27.28
1940.99	-0.00	0.00	6.1	0.164E+02	0.57	27.30
1947.08	-0.00	0.00	6.1	0.164E+02	0.57	27.32
1953.18	-0.00	0.00	6.1	0.164E+02	0.57	27.34
1959.27	-0.00	0.00	6.1	0.163E+02	0.57	27.36
1965.36	-0.00	0.00	6.1	0.163E+02	0.57	27.38
1971.46	-0.00	0.00	6.1	0.163E+02	0.57	27.40
1977.55	-0.00	0.00	6.1	0.163E+02	0.57	27.42
1983.64	-0.00	0.00	6.1	0.163E+02	0.57	27.44
1989.74	-0.00	0.00	6.1	0.163E+02	0.57	27.46
1995.83	-0.00	0.00	6.1	0.163E+02	0.57	27.48
2001.93	-0.00	0.00	6.1	0.163E+02	0.57	27.49
2008.02	-0.00	0.00	6.2	0.163E+02	0.57	27.51
2014.11	-0.00	0.00	6.2	0.162E+02	0.57	27.53
2020.21	-0.00	0.00	6.2	0.162E+02	0.57	27.55
2026.30	-0.00	0.00	6.2	0.162E+02	0.57	27.57
2032.39	-0.00	0.00	6.2	0.162E+02	0.57	27.59
2038.49	-0.00	0.00	6.2	0.162E+02	0.57	27.61
2044.58	-0.00	0.00	6.2	0.162E+02	0.57	27.63
2050.67	-0.00	0.00	6.2	0.162E+02	0.57	27.65
2056.77	-0.00	0.00	6.2	0.162E+02	0.57	27.67
2062.86	-0.00	0.00	6.2	0.162E+02	0.57	27.69
2068.96	-0.00	0.00	6.2	0.161E+02	0.57	27.70
2075.05	-0.00	0.00	6.2	0.161E+02	0.57	27.72
2081.14	-0.00	0.00	6.2	0.161E+02	0.57	27.74
2087.24	-0.00	0.00	6.2	0.161E+02	0.57	27.76
2093.33	-0.00	0.00	6.2	0.161E+02	0.57	27.78
2099.42	-0.00	0.00	6.2	0.161E+02	0.57	27.80
2105.52	-0.00	0.00	6.2	0.161E+02	0.57	27.82
2111.61	-0.00	0.00	6.2	0.161E+02	0.57	27.84
2117.71	-0.00	0.00	6.2	0.161E+02	0.57	27.86
2123.80	-0.00	0.00	6.2	0.160E+02	0.57	27.87
2129.89	-0.00	0.00	6.2	0.160E+02	0.57	27.89
2135.99	-0.00	0.00	6.2	0.160E+02	0.57	27.91
2142.08	-0.00	0.00	6.2	0.160E+02	0.57	27.93
2148.17	-0.00	0.00	6.3	0.160E+02	0.57	27.95
2154.27	-0.00	0.00	6.3	0.160E+02	0.57	27.97
2160.36	-0.00	0.00	6.3	0.160E+02	0.57	27.99
2166.46	-0.00	0.00	6.3	0.160E+02	0.57	28.01
2172.55	-0.00	0.00	6.3	0.160E+02	0.57	28.03
2178.64	-0.00	0.00	6.3	0.159E+02	0.57	28.04
2184.74	-0.00	0.00	6.3	0.159E+02	0.57	28.06
2190.83	-0.00	0.00	6.3	0.159E+02	0.57	28.08
2196.92	-0.00	0.00	6.3	0.159E+02	0.57	28.10
2203.02	-0.00	0.00	6.3	0.159E+02	0.57	28.12
2209.11	-0.00	0.00	6.3	0.159E+02	0.57	28.14
2215.21	-0.00	0.00	6.3	0.159E+02	0.57	28.16
2221.30	-0.00	0.00	6.3	0.159E+02	0.57	28.18
2227.39	-0.00	0.00	6.3	0.159E+02	0.57	28.19

2233.49	-0.00	0.00	6.3	0.158E+02	0.57	28.21
2239.58	-0.00	0.00	6.3	0.158E+02	0.57	28.23
2245.67	-0.00	0.00	6.3	0.158E+02	0.57	28.25
2251.77	-0.00	0.00	6.3	0.158E+02	0.57	28.27
2257.86	-0.00	0.00	6.3	0.158E+02	0.57	28.29
2263.96	-0.00	0.00	6.3	0.158E+02	0.57	28.31
2270.05	-0.00	0.00	6.3	0.158E+02	0.57	28.32
2276.14	-0.00	0.00	6.3	0.158E+02	0.57	28.34
2282.24	-0.00	0.00	6.3	0.158E+02	0.57	28.36
2288.33	-0.00	0.00	6.3	0.158E+02	0.57	28.38
2294.42	-0.00	0.00	6.4	0.157E+02	0.57	28.40
2300.52	-0.00	0.00	6.4	0.157E+02	0.57	28.42
2306.61	-0.00	0.00	6.4	0.157E+02	0.57	28.44
2312.71	-0.00	0.00	6.4	0.157E+02	0.57	28.45
2318.80	-0.00	0.00	6.4	0.157E+02	0.57	28.47
2324.89	-0.00	0.00	6.4	0.157E+02	0.57	28.49
2330.99	-0.00	0.00	6.4	0.157E+02	0.57	28.51
2337.08	-0.00	0.00	6.4	0.157E+02	0.57	28.53
2343.17	-0.00	0.00	6.4	0.157E+02	0.57	28.55
2349.27	-0.00	0.00	6.4	0.157E+02	0.57	28.56
2355.36	-0.00	0.00	6.4	0.156E+02	0.57	28.58
2361.46	-0.00	0.00	6.4	0.156E+02	0.57	28.60
2367.55	-0.00	0.00	6.4	0.156E+02	0.57	28.62
2373.64	-0.00	0.00	6.4	0.156E+02	0.57	28.64
2379.74	-0.00	0.00	6.4	0.156E+02	0.57	28.66
2385.83	-0.00	0.00	6.4	0.156E+02	0.57	28.67
2391.92	-0.00	0.00	6.4	0.156E+02	0.57	28.69
2398.02	-0.00	0.00	6.4	0.156E+02	0.57	28.71
2404.11	-0.00	0.00	6.4	0.156E+02	0.57	28.73
2410.21	-0.00	0.00	6.4	0.156E+02	0.57	28.75
2416.30	-0.00	0.00	6.4	0.155E+02	0.57	28.77
2422.39	-0.00	0.00	6.4	0.155E+02	0.57	28.78
2428.49	-0.00	0.00	6.4	0.155E+02	0.57	28.80
2434.58	-0.00	0.00	6.4	0.155E+02	0.57	28.82
2440.67	-0.00	0.00	6.4	0.155E+02	0.57	28.84
2446.77	-0.00	0.00	6.5	0.155E+02	0.57	28.86
2452.86	-0.00	0.00	6.5	0.155E+02	0.57	28.88
2458.96	-0.00	0.00	6.5	0.155E+02	0.57	28.89
2465.05	-0.00	0.00	6.5	0.155E+02	0.57	28.91
2471.14	-0.00	0.00	6.5	0.155E+02	0.57	28.93
2477.24	-0.00	0.00	6.5	0.154E+02	0.57	28.95
2483.33	-0.00	0.00	6.5	0.154E+02	0.57	28.97
2489.42	-0.00	0.00	6.5	0.154E+02	0.57	28.99
2495.52	-0.00	0.00	6.5	0.154E+02	0.57	29.00
2501.61	-0.00	0.00	6.5	0.154E+02	0.57	29.02
2507.71	-0.00	0.00	6.5	0.154E+02	0.57	29.04
2513.80	-0.00	0.00	6.5	0.154E+02	0.57	29.06
2519.89	-0.00	0.00	6.5	0.154E+02	0.57	29.08
2525.99	-0.00	0.00	6.5	0.154E+02	0.57	29.09
2532.08	-0.00	0.00	6.5	0.154E+02	0.57	29.11
2538.17	-0.00	0.00	6.5	0.153E+02	0.57	29.13
2544.27	-0.00	0.00	6.5	0.153E+02	0.57	29.15
2550.36	-0.00	0.00	6.5	0.153E+02	0.57	29.17
2556.46	-0.00	0.00	6.5	0.153E+02	0.57	29.18
2562.55	-0.00	0.00	6.5	0.153E+02	0.57	29.20
2568.64	-0.00	0.00	6.5	0.153E+02	0.57	29.22
2574.74	-0.00	0.00	6.5	0.153E+02	0.57	29.24

2580.83	-0.00	0.00	6.5	0.153E+02	0.57	29.26
2586.92	-0.00	0.00	6.5	0.153E+02	0.57	29.27
2593.02	-0.00	0.00	6.6	0.153E+02	0.57	29.29
2599.11	-0.00	0.00	6.6	0.153E+02	0.57	29.31
2605.21	-0.00	0.00	6.6	0.152E+02	0.57	29.33
2611.30	-0.00	0.00	6.6	0.152E+02	0.57	29.35
2617.39	-0.00	0.00	6.6	0.152E+02	0.57	29.36
2623.49	-0.00	0.00	6.6	0.152E+02	0.57	29.38
2629.58	-0.00	0.00	6.6	0.152E+02	0.57	29.40
2635.67	-0.00	0.00	6.6	0.152E+02	0.57	29.42
2641.77	-0.00	0.00	6.6	0.152E+02	0.57	29.44
2647.86	-0.00	0.00	6.6	0.152E+02	0.57	29.45
2653.96	-0.00	0.00	6.6	0.152E+02	0.57	29.47
2660.05	-0.00	0.00	6.6	0.152E+02	0.57	29.49
2666.14	-0.00	0.00	6.6	0.152E+02	0.57	29.51
2672.24	-0.00	0.00	6.6	0.151E+02	0.57	29.52
2678.33	-0.00	0.00	6.6	0.151E+02	0.57	29.54
2684.42	-0.00	0.00	6.6	0.151E+02	0.57	29.56
2690.52	-0.00	0.00	6.6	0.151E+02	0.57	29.58
2696.61	-0.00	0.00	6.6	0.151E+02	0.57	29.60
2702.71	-0.00	0.00	6.6	0.151E+02	0.57	29.61
2708.80	-0.00	0.00	6.6	0.151E+02	0.57	29.63
2714.89	-0.00	0.00	6.6	0.151E+02	0.57	29.65
2720.99	-0.00	0.00	6.6	0.151E+02	0.57	29.67
2727.08	-0.00	0.00	6.6	0.151E+02	0.57	29.68
2733.17	-0.00	0.00	6.6	0.151E+02	0.57	29.70
2739.27	-0.00	0.00	6.6	0.150E+02	0.57	29.72
2745.36	-0.00	0.00	6.7	0.150E+02	0.57	29.74
2751.46	-0.00	0.00	6.7	0.150E+02	0.57	29.76
2757.55	-0.00	0.00	6.7	0.150E+02	0.57	29.77
2763.64	-0.00	0.00	6.7	0.150E+02	0.57	29.79
2769.74	-0.00	0.00	6.7	0.150E+02	0.57	29.81
2775.83	-0.00	0.00	6.7	0.150E+02	0.57	29.83
2781.92	-0.00	0.00	6.7	0.150E+02	0.57	29.84
2788.02	-0.00	0.00	6.7	0.150E+02	0.57	29.86
2794.11	-0.00	0.00	6.7	0.150E+02	0.57	29.88
2800.21	-0.00	0.00	6.7	0.150E+02	0.57	29.90
2806.30	-0.00	0.00	6.7	0.149E+02	0.57	29.91
2812.39	-0.00	0.00	6.7	0.149E+02	0.57	29.93
2818.49	-0.00	0.00	6.7	0.149E+02	0.57	29.95
2824.58	-0.00	0.00	6.7	0.149E+02	0.57	29.97
2830.67	-0.00	0.00	6.7	0.149E+02	0.57	29.98
2836.77	-0.00	0.00	6.7	0.149E+02	0.57	30.00
2842.86	-0.00	0.00	6.7	0.149E+02	0.57	30.02
2848.96	-0.00	0.00	6.7	0.149E+02	0.57	30.04
2855.05	-0.00	0.00	6.7	0.149E+02	0.57	30.05
2861.14	-0.00	0.00	6.7	0.149E+02	0.57	30.07
2867.24	-0.00	0.00	6.7	0.149E+02	0.57	30.09
2873.33	-0.00	0.00	6.7	0.149E+02	0.57	30.11
2879.42	-0.00	0.00	6.7	0.148E+02	0.57	30.12
2885.52	-0.00	0.00	6.7	0.148E+02	0.57	30.14
2891.61	-0.00	0.00	6.7	0.148E+02	0.57	30.16
2897.71	-0.00	0.00	6.7	0.148E+02	0.57	30.18
2903.80	-0.00	0.00	6.8	0.148E+02	0.57	30.19
2909.89	-0.00	0.00	6.8	0.148E+02	0.57	30.21
2915.99	-0.00	0.00	6.8	0.148E+02	0.57	30.23
2922.08	-0.00	0.00	6.8	0.148E+02	0.57	30.25

2928.17	-0.00	0.00	6.8	0.148E+02	0.57	30.26
2934.27	-0.00	0.00	6.8	0.148E+02	0.57	30.28
2940.36	-0.00	0.00	6.8	0.148E+02	0.57	30.30
2946.46	-0.00	0.00	6.8	0.147E+02	0.57	30.32
2952.55	-0.00	0.00	6.8	0.147E+02	0.57	30.33
2958.64	-0.00	0.00	6.8	0.147E+02	0.57	30.35
2964.74	-0.00	0.00	6.8	0.147E+02	0.57	30.37
2970.83	-0.00	0.00	6.8	0.147E+02	0.57	30.39
2976.92	-0.00	0.00	6.8	0.147E+02	0.57	30.40
2983.02	-0.00	0.00	6.8	0.147E+02	0.57	30.42
2989.11	-0.00	0.00	6.8	0.147E+02	0.57	30.44
2995.21	-0.00	0.00	6.8	0.147E+02	0.57	30.45
3001.30	-0.00	0.00	6.8	0.147E+02	0.57	30.47

The passive diffusion plume becomes LATERALLY FULLY MIXED over the channel width during the current prediction interval.

3007.39	-0.00	0.00	6.8	0.147E+02	0.57	30.48

Effluent is FULLY MIXED over the entire channel cross-section.
Except for possible far-field decay or reaction processes, there are NO FURTHER CHANGES with downstream direction.

3013.49	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3019.58	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3025.67	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3031.77	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3037.86	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3043.96	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3050.05	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3056.14	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3062.24	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3068.33	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3074.42	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3080.52	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3086.61	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3092.71	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3098.80	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3104.89	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3110.99	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3117.08	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3123.17	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3129.27	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3135.36	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3141.46	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3147.55	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3153.64	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3159.74	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3165.83	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3171.92	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3178.02	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3184.11	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3190.21	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3196.30	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3202.39	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3208.49	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3214.58	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3220.67	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3226.77	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3232.86	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3238.96	-0.00	0.00	6.8	0.147E+02	0.57	30.48

3245.05	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3251.14	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3257.24	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3263.33	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3269.42	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3275.52	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3281.61	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3287.71	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3293.80	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3299.89	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3305.99	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3312.08	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3318.17	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3324.27	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3330.36	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3336.46	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3342.55	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3348.64	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3354.74	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3360.83	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3366.92	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3373.02	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3379.11	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3385.21	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3391.30	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3397.39	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3403.49	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3409.58	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3415.67	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3421.77	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3427.86	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3433.96	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3440.05	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3446.14	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3452.24	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3458.33	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3464.42	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3470.52	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3476.61	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3482.71	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3488.80	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3494.89	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3500.99	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3507.08	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3513.17	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3519.27	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3525.36	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3531.46	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3537.55	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3543.64	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3549.74	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3555.83	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3561.92	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3568.02	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3574.11	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3580.21	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3586.30	-0.00	0.00	6.8	0.147E+02	0.57	30.48

3592.39	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3598.49	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3604.58	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3610.67	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3616.77	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3622.86	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3628.96	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3635.05	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3641.14	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3647.24	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3653.33	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3659.42	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3665.52	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3671.61	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3677.71	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3683.80	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3689.89	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3695.99	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3702.08	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3708.17	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3714.27	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3720.36	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3726.46	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3732.55	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3738.64	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3744.74	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3750.83	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3756.92	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3763.02	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3769.11	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3775.21	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3781.30	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3787.39	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3793.49	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3799.58	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3805.67	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3811.77	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3817.86	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3823.96	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3830.05	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3836.14	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3842.24	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3848.33	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3854.42	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3860.52	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3866.61	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3872.71	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3878.80	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3884.89	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3890.99	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3897.08	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3903.17	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3909.27	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3915.36	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3921.46	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3927.55	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3933.64	-0.00	0.00	6.8	0.147E+02	0.57	30.48

3939.74	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3945.83	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3951.92	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3958.02	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3964.11	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3970.21	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3976.30	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3982.39	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3988.49	-0.00	0.00	6.8	0.147E+02	0.57	30.48
3994.58	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4000.67	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4006.77	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4012.86	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4018.96	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4025.05	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4031.14	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4037.24	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4043.33	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4049.42	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4055.52	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4061.61	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4067.71	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4073.80	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4079.89	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4085.99	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4092.08	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4098.17	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4104.27	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4110.36	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4116.46	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4122.55	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4128.64	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4134.74	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4140.83	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4146.92	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4153.02	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4159.11	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4165.21	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4171.30	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4177.39	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4183.49	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4189.58	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4195.67	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4201.77	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4207.86	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4213.96	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4220.05	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4226.14	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4232.24	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4238.33	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4244.42	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4250.52	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4256.61	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4262.71	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4268.80	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4274.89	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4280.99	-0.00	0.00	6.8	0.147E+02	0.57	30.48

4287.08	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4293.17	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4299.27	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4305.36	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4311.46	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4317.55	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4323.64	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4329.74	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4335.83	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4341.92	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4348.02	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4354.11	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4360.21	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4366.30	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4372.39	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4378.49	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4384.58	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4390.67	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4396.77	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4402.86	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4408.96	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4415.05	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4421.14	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4427.24	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4433.33	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4439.42	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4445.52	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4451.61	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4457.71	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4463.80	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4469.89	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4475.99	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4482.08	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4488.17	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4494.27	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4500.36	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4506.46	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4512.55	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4518.64	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4524.74	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4530.83	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4536.92	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4543.02	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4549.11	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4555.21	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4561.30	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4567.39	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4573.49	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4579.58	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4585.67	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4591.77	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4597.86	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4603.96	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4610.05	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4616.14	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4622.24	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4628.33	-0.00	0.00	6.8	0.147E+02	0.57	30.48

4634.42	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4640.52	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4646.61	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4652.71	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4658.80	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4664.89	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4670.99	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4677.08	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4683.17	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4689.27	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4695.36	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4701.46	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4707.55	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4713.64	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4719.74	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4725.83	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4731.92	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4738.02	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4744.11	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4750.21	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4756.30	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4762.39	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4768.49	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4774.58	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4780.67	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4786.77	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4792.86	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4798.96	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4805.05	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4811.14	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4817.24	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4823.33	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4829.42	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4835.52	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4841.61	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4847.71	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4853.80	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4859.89	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4865.99	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4872.08	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4878.17	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4884.27	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4890.36	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4896.46	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4902.55	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4908.64	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4914.74	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4920.83	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4926.92	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4933.02	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4939.11	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4945.21	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4951.30	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4957.39	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4963.49	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4969.58	-0.00	0.00	6.8	0.147E+02	0.57	30.48
4975.67	-0.00	0.00	6.8	0.147E+02	0.57	30.48

```
  4981.77    -0.00    0.00     6.8 0.147E+02   0.57    30.48
  4987.86    -0.00    0.00     6.8 0.147E+02   0.57    30.48
  4993.96    -0.00    0.00     6.8 0.147E+02   0.57    30.48
  5000.05    -0.00    0.00     6.8 0.147E+02   0.57    30.48
Cumulative travel time =       14409.5322 sec

Simulation limit based on maximum specified distance =   5000.00 m.
  This is the REGION OF INTEREST limitation.

END OF MOD361: PASSIVE AMBIENT MIXING IN UNIFORM AMBIENT
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
CORMIX3: Buoyant Surface Discharges                    End of Prediction File
333333333333333333333333333333333333333333333333333333333333333333333333333333
```

MODEL OUTPUT: BASE SCENARIO n. 2

```
CORMIX SESSION REPORT:
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                        CORMIX MIXING ZONE EXPERT SYSTEM
                            CORMIX Version 5.0GT
                         HYDRO3:Version-5.0.2.0  October,2008
SITE NAME/LABEL:                 Turlock
  DESIGN CASE:
  FILE NAME:                     \\Dav-nas\pub\01 Employee
Folders\LauraF\Turlock\Turlock Base Case 617cfs 20mgd.prd
  Using subsystem CORMIX3:     Buoyant Surface Discharges
  Start of session:              06/10/2009--14:56:52
*****************************************************************************
SUMMARY OF INPUT DATA:
-----------------------------------------------------------------------------
AMBIENT PARAMETERS:
  Cross-section                          = bounded
  Width                            BS    = 30.48 m
  Channel regularity               ICHREG = 3
  Ambient flowrate                 QA    = 17.47 m^3/s
  Average depth                    HA    = 0.93 m
  Depth at discharge               HD    = 0.93 m
  Ambient velocity                 UA    = 0.6166 m/s
  Darcy-Weisbach friction factor   F     = 0.0875
    Calculated from Manning's n          = 0.033
  Wind velocity                    UW    = 0.1 m/s
  Stratification Type              STRCND = U
  Surface temperature                    = 20 degC
  Bottom temperature                     = 20 degC
  Calculated FRESH-WATER DENSITY values:
  Surface density                  RHOAS  = 998.2051 kg/m^3
  Bottom density                   RHOAB  = 998.2051 kg/m^3
-----------------------------------------------------------------------------
DISCHARGE PARAMETERS:              Surface Discharge
  Discharge located on                   = right bank/shoreline
  Discharge configuration                = flush discharge
  Distance from bank to outlet     DISTB  = 0 m
  Discharge angle                  SIGMA  = 90 deg
  Depth near discharge outlet      HD0    = 0.93 m
  Bottom slope at discharge        SLOPE  = 0 deg
  Rectangular discharge:
    Discharge cross-section area   A0     = 0.4 m^2
    Discharge channel width        B0     = 2 m
    Discharge channel depth        H0     = 0.2 m
    Discharge aspect ratio         AR     = 0.1
  Discharge flowrate               Q0     = 0.876253 m^3/s
  Discharge velocity               U0     = 2.19 m/s
  Discharge temperature (freshwater)      = 20 degC
  Corresponding density            RHO0   = 998.2051 kg/m^3
  Density difference               DRHO   = 0 kg/m^3
  Buoyant acceleration             GP0    = 0 m/s^2
  Discharge concentration          C0     = 100 mg/l
  Surface heat exchange coeff.     KS     = 0 m/s
  Coefficient of decay             KD     = 0 /s
-----------------------------------------------------------------------------
```

```
DISCHARGE/ENVIRONMENT LENGTH SCALES:
  LQ  = 0.63 m          Lm  = 2.25 m          Lbb = 0 m
  LM  = 99999 m
-----------------------------------------------------------------------------
NON-DIMENSIONAL PARAMETERS:
  Densimetric Froude number        FRO    = 99999 (based on LQ)
  Channel densimetric Froude no.   FRCH   = 99999 (based on H0)
  Velocity ratio                   R      = 3.55
-----------------------------------------------------------------------------
MIXING ZONE / TOXIC DILUTION ZONE / AREA OF INTEREST PARAMETERS:
  Toxic discharge                          = no
  Water quality standard specified         = yes
  Water quality standard           CSTD    = 20 mg/l
  Regulatory mixing zone                   = yes
  Regulatory mixing zone specification     = distance
  Regulatory mixing zone value             = 30.48 m (m^2 if area)
  Region of interest                       = 5000 m
*****************************************************************************
HYDRODYNAMIC CLASSIFICATION:
  *-------------------------*
  | FLOW CLASS   = SA1 |
  *-------------------------*
*****************************************************************************
MIXING ZONE EVALUATION (hydrodynamic and regulatory summary):

-----------------------------------------------------------------------------
X-Y-Z Coordinate system:
Origin is located at water surface and at centerline of discharge channel:
    0 m from the right bank/shore.
  Number of display steps NSTEP = 800 per module.
-----------------------------------------------------------------------------
NEAR-FIELD REGION (NFR) CONDITIONS :
Note: The NFR is the zone of strong initial mixing.  It has no regulatory
  implication.  However, this information may be useful for the discharge
  designer because the mixing in the NFR is usually sensitive to the
  discharge design conditions.
  Pollutant concentration at NFR edge  c = 18.201800 mg/l
  Dilution at edge of NFR              s = 5.5
  NFR Location:                        x = 74.18 m
    (centerline coordinates)           y = 2.74 m
                                       z = 0 m
  NFR plume dimensions:  half-width (bh) = 2.93 m
                          thickness (bv) = 0.93 m
Cumulative travel time:       97.9222 sec.
-----------------------------------------------------------------------------
Buoyancy assessment:
  The effluent density is equal or about about equal to the surrounding
  ambient water density at the discharge level.
  Therefore, the effluent behaves essentially as NEUTRALLY BUOYANT.
-----------------------------------------------------------------------------
FAR-FIELD MIXING SUMMARY:
  Plume becomes vertically fully mixed ALREADY IN NEAR-FIELD at 80.33 m
  downstream and continues as vertically mixed into the far-field.
  Plume becomes laterally fully mixed at 3047.02 m
  downstream.
-----------------------------------------------------------------------------
PLUME BANK CONTACT SUMMARY:
```

```
  Plume in bounded section contacts one bank only at 0 m downstream.
************************ TOXIC DILUTION ZONE SUMMARY ************************
No TDZ was specified for this simulation.
********************** REGULATORY MIXING ZONE SUMMARY **********************
The plume conditions at the boundary of the specified RMZ are as follows:
  Pollutant concentration              c = 23.245552  mg/l
  Corresponding dilution               s = 4.3
  Plume location:                      x = 30.47 m
    (centerline coordinates)           y = 11.90 m
                                       z = 0 m
  Plume dimensions:      half-width (bh) = 2.35 m
                          thickness (bv) = 0.93 m
Cumulative travel time < 97.9222 sec. (RMZ is within NFR)
At this position, the plume is NOT IN CONTACT with any bank.
However, the specified water quality standard has not been met
  within the RMZ. In particular:
The ambient water quality standard was encountered at the following
  plume position:
  Water quality standard                 = 20  mg/l
  Corresponding dilution               s = 5
  Plume location:                      x = 59.11 m
    (centerline coordinates)           y = 7.88 m
                                       z = 0 m
  Plume dimensions:      half-width (bh) = 2.72 m
                          thickness (bv) = 0.93 m
-----------------------------------------------------------------------------
Regulatory Mixing Zone Analysis:
  The RMZ specification occurs before the near-field mixing regime (NFR) has
  been completed.  The specification of the RMZ is highly restrictive.
********************** FINAL DESIGN ADVICE AND COMMENTS **********************
REMINDER:  The user must take note that HYDRODYNAMIC MODELING by any known
  technique is NOT AN EXACT SCIENCE.
Extensive comparison with field and laboratory data has shown that the
  CORMIX predictions on dilutions and concentrations (with associated
  plume geometries) are reliable for the majority of cases and are accurate
  to within about +-50% (standard deviation).
As a further safeguard, CORMIX will not give predictions whenever it judges
  the design configuration as highly complex and uncertain for prediction.
```

```
CORMIX3 PREDICTION FILE:
3333333333333333333333333333333333333333333333333333333333333333333333333333
                        CORMIX MIXING ZONE EXPERT SYSTEM
                 Subsystem CORMIX3:   Buoyant Surface Discharges
                          CORMIX Version 5.0GT
                       HYDRO3 Version 5.0.2.0 October 2008
-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
CASE DESCRIPTION
 Site name/label:   Turlock
 Design case:
 FILE NAME:         \\D...LauraF\Turlock\Turlock_Base_Case_617cfs_20mgd.prd
 Time stamp:        Wed Jun 10 14:56:52 2009

ENVIRONMENT PARAMETERS (metric units)
 Bounded section
 BS    =      30.48  AS    =      28.34  QA    =      17.47  ICHREG= 3
 HA    =       0.93  HD    =       0.93
 UA    =      0.617  F     =      0.088 USTAR =0.6450E-01
 UW    =      0.100 UWSTAR=0.1046E-03
 Uniform density environment
 STRCND=  U          RHOAM =  998.2051

DISCHARGE PARAMETERS (metric units)
 BANK  =  RIGHT      DISTB =       0.00  Configuration: flush_discharge
 SIGMA =     90.00   HDO   =       0.93  SLOPE =    0.00 deg.
 Rectangular channel geometry:
 B0    =      2.000 H0    =      0.200 A0    =0.4000E+00  AR    =      0.100
 U0    =      2.191 Q0    =      0.876       =0.8763E+00
 RHO0  =  998.2051  DRHO0 =0.0000E+00  GP0   =0.0000E+00
 C0    =0.1000E+03  CUNITS=  mg/l
 IPOLL =  1         KS    =0.0000E+00  KD    =0.0000E+00

FLUX VARIABLES (metric units)
 Q0    =0.8763E+00  M0    =0.1920E+01  J0    =0.0000E+00
 Associated length scales (meters)
 LQ    =      0.63  LM    =  99999.00  Lm    =      2.25  Lb    =      0.00

NON-DIMENSIONAL PARAMETERS
 FR0   =  99999.00  FRCH  =  99999.00  R     =      3.55

FLOW CLASSIFICATION
 333333333333333333333333333333333333333333
 3  Flow class (CORMIX3)       =    SA1    3
 3  Applicable layer depth HS =     0.93  3
 333333333333333333333333333333333333333333

MIXING ZONE / TOXIC DILUTION / REGION OF INTEREST PARAMETERS
 C0    =0.1000E+03  CUNITS=  mg/l
 NTOX  =  0
 NSTD  =  1         CSTD  =0.2000E+02
 REGMZ =  1
 REGSPC=  1         XREG  =     30.48  WREG  =      0.00  AREG  =      0.00
 XINT  =   5000.00  XMAX  =   5000.00

X-Y-Z COORDINATE SYSTEM:
    ORIGIN is located at the WATER SURFACE and at center of discharge
```

```
      channel/outlet:       0.00 m  from the RIGHT bank/shore.
    X-axis points downstream
    Y-axis points to left as seen by an observer looking downstream
    Z-axis points vertically upward (in CORMIX3, all values Z = 0.00)
NSTEP = 800 display intervals per module
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
BEGIN MOD301: DISCHARGE MODULE

 Efflux conditions:
       X         Y         Z         S        C        BV        BH
      0.00      0.00      0.00      1.0 0.100E+03   0.20      1.00

END OF MOD301: DISCHARGE MODULE
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
BEGIN MOD302: ZONE OF FLOW ESTABLISHMENT

  Control volume inflow:
       X         Y         Z         S        C        BV        BH
      0.00      0.00      0.00      1.0 0.100E+03   0.20      1.00

 Profile definitions:
   BV = Gaussian 1/e (37%) vertical thickness
   BH = Gaussian 1/e (37%) horizontal half-width, normal to trajectory
   S = hydrodynamic centerline dilution
   C = centerline concentration (includes reaction effects, if any)

  Control volume outflow:                                   SIGMAE=     85.11
       X         Y         Z         S        C        BV        BH
      0.10      1.24      0.00      1.0 0.100E+03   0.34      1.07
 Cumulative travel time =           0.5687 sec

END OF MOD302: ZONE OF FLOW ESTABLISHMENT
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
BEGIN CORSURF (MOD310): BUOYANT SURFACE JET - NEAR-FIELD REGION

 Surface jet in deep crossflow with shoreline-attachment.

 Profile definitions:
   BV = Gaussian 1/e (37%) vertical thickness
   BH = Gaussian 1/e (37%) horizontal half-width, normal to trajectory
   S = hydrodynamic centerline dilution
   C = centerline concentration (includes reaction effects, if any)

       X         Y         Z         S        C        BV        BH
      0.10      1.24      0.00      1.0 0.100E+03   0.34      1.07
      0.18      1.64      0.00      1.3 0.771E+02   0.43      1.36
      0.22      1.86      0.00      1.4 0.738E+02   0.45      1.41
      0.27      2.08      0.00      1.4 0.708E+02   0.46      1.46
      0.33      2.29      0.00      1.5 0.679E+02   0.48      1.51
      0.40      2.51      0.00      1.5 0.652E+02   0.49      1.55
      0.47      2.72      0.00      1.6 0.627E+02   0.50      1.60
      0.56      2.93      0.00      1.7 0.604E+02   0.52      1.64
      0.65      3.13      0.00      1.7 0.582E+02   0.53      1.69
      0.75      3.33      0.00      1.8 0.561E+02   0.55      1.73
```

0.86	3.53	0.00	1.8	0.542E+02	0.56	1.77
0.98	3.72	0.00	1.9	0.524E+02	0.57	1.81
1.10	3.91	0.00	2.0	0.507E+02	0.58	1.85
1.23	4.10	0.00	2.0	0.491E+02	0.60	1.89
1.36	4.28	0.00	2.1	0.477E+02	0.61	1.92
1.50	4.45	0.00	2.2	0.463E+02	0.62	1.96
1.64	4.62	0.00	2.2	0.450E+02	0.63	1.99
1.79	4.79	0.00	2.3	0.438E+02	0.65	1.99
1.95	4.95	0.00	2.3	0.427E+02	0.69	1.94
2.11	5.11	0.00	2.4	0.415E+02	0.72	1.90
2.27	5.27	0.00	2.5	0.404E+02	0.76	1.88
2.44	5.42	0.00	2.5	0.394E+02	0.79	1.85
2.61	5.56	0.00	2.6	0.384E+02	0.82	1.84
2.79	5.70	0.00	2.7	0.374E+02	0.85	1.82
2.96	5.84	0.00	2.7	0.365E+02	0.88	1.82
3.15	5.97	0.00	2.8	0.356E+02	0.91	1.81

Jet/plume becomes VERTICALLY FULLY MIXED over the local ambient water depth.
BV = water depth (vertically mixed)

3.33	6.10	0.00	2.9	0.347E+02	0.94	1.81
3.33	6.10	0.00	2.9	0.347E+02	0.93	1.81
3.52	6.22	0.00	2.9	0.344E+02	0.93	1.81
3.71	6.35	0.00	2.9	0.342E+02	0.93	1.82
3.90	6.47	0.00	2.9	0.339E+02	0.93	1.83
4.09	6.58	0.00	3.0	0.337E+02	0.93	1.83
4.28	6.70	0.00	3.0	0.334E+02	0.93	1.84
4.48	6.81	0.00	3.0	0.332E+02	0.93	1.84
4.67	6.92	0.00	3.0	0.330E+02	0.93	1.85
4.87	7.03	0.00	3.0	0.328E+02	0.93	1.86
5.07	7.13	0.00	3.1	0.326E+02	0.93	1.86
5.27	7.24	0.00	3.1	0.324E+02	0.93	1.87
5.47	7.34	0.00	3.1	0.322E+02	0.93	1.87
5.67	7.44	0.00	3.1	0.320E+02	0.93	1.88
5.87	7.54	0.00	3.1	0.318E+02	0.93	1.88
6.07	7.64	0.00	3.2	0.317E+02	0.93	1.89
6.28	7.73	0.00	3.2	0.315E+02	0.93	1.89
6.48	7.82	0.00	3.2	0.313E+02	0.93	1.90
6.69	7.92	0.00	3.2	0.312E+02	0.93	1.91
6.89	8.01	0.00	3.2	0.310E+02	0.93	1.91
7.10	8.09	0.00	3.2	0.308E+02	0.93	1.92
7.31	8.18	0.00	3.3	0.307E+02	0.93	1.92
7.51	8.26	0.00	3.3	0.305E+02	0.93	1.93
7.72	8.35	0.00	3.3	0.304E+02	0.93	1.93
7.93	8.43	0.00	3.3	0.303E+02	0.93	1.94
8.14	8.51	0.00	3.3	0.301E+02	0.93	1.94
8.35	8.59	0.00	3.3	0.300E+02	0.93	1.95
8.56	8.67	0.00	3.3	0.299E+02	0.93	1.95
8.77	8.74	0.00	3.4	0.297E+02	0.93	1.96
8.99	8.82	0.00	3.4	0.296E+02	0.93	1.96
9.20	8.89	0.00	3.4	0.295E+02	0.93	1.97
9.41	8.96	0.00	3.4	0.294E+02	0.93	1.97
9.62	9.03	0.00	3.4	0.292E+02	0.93	1.98
9.84	9.10	0.00	3.4	0.291E+02	0.93	1.98
10.05	9.17	0.00	3.4	0.290E+02	0.93	1.99
10.27	9.24	0.00	3.5	0.289E+02	0.93	1.99
10.48	9.31	0.00	3.5	0.288E+02	0.93	2.00
10.70	9.37	0.00	3.5	0.287E+02	0.93	2.00
10.91	9.43	0.00	3.5	0.286E+02	0.93	2.01

11.13	9.50	0.00	3.5	0.285E+02	0.93	2.01
11.34	9.56	0.00	3.5	0.284E+02	0.93	2.02
11.56	9.62	0.00	3.5	0.283E+02	0.93	2.02
11.78	9.68	0.00	3.5	0.282E+02	0.93	2.03
11.99	9.74	0.00	3.6	0.281E+02	0.93	2.03
12.21	9.79	0.00	3.6	0.280E+02	0.93	2.04
12.43	9.85	0.00	3.6	0.279E+02	0.93	2.04
12.65	9.91	0.00	3.6	0.278E+02	0.93	2.04
12.86	9.96	0.00	3.6	0.277E+02	0.93	2.05
13.08	10.01	0.00	3.6	0.276E+02	0.93	2.05
13.30	10.07	0.00	3.6	0.275E+02	0.93	2.06
13.52	10.12	0.00	3.6	0.274E+02	0.93	2.06
13.74	10.17	0.00	3.7	0.274E+02	0.93	2.07
13.96	10.22	0.00	3.7	0.273E+02	0.93	2.07
14.18	10.27	0.00	3.7	0.272E+02	0.93	2.08
14.40	10.31	0.00	3.7	0.271E+02	0.93	2.08
14.62	10.36	0.00	3.7	0.270E+02	0.93	2.08
14.84	10.41	0.00	3.7	0.270E+02	0.93	2.09
15.06	10.45	0.00	3.7	0.269E+02	0.93	2.09
15.28	10.50	0.00	3.7	0.268E+02	0.93	2.10
15.50	10.54	0.00	3.7	0.267E+02	0.93	2.10
15.72	10.58	0.00	3.8	0.267E+02	0.93	2.11
15.94	10.62	0.00	3.8	0.266E+02	0.93	2.11
16.16	10.66	0.00	3.8	0.265E+02	0.93	2.11
16.38	10.71	0.00	3.8	0.264E+02	0.93	2.12
16.60	10.74	0.00	3.8	0.264E+02	0.93	2.12
16.82	10.78	0.00	3.8	0.263E+02	0.93	2.13
17.05	10.82	0.00	3.8	0.262E+02	0.93	2.13
17.27	10.86	0.00	3.8	0.262E+02	0.93	2.14
17.49	10.89	0.00	3.8	0.261E+02	0.93	2.14
17.71	10.93	0.00	3.8	0.260E+02	0.93	2.14
17.93	10.97	0.00	3.9	0.260E+02	0.93	2.15
18.15	11.00	0.00	3.9	0.259E+02	0.93	2.15
18.38	11.03	0.00	3.9	0.258E+02	0.93	2.16
18.60	11.07	0.00	3.9	0.258E+02	0.93	2.16
18.82	11.10	0.00	3.9	0.257E+02	0.93	2.16
19.04	11.13	0.00	3.9	0.257E+02	0.93	2.17
19.27	11.16	0.00	3.9	0.256E+02	0.93	2.17
19.49	11.19	0.00	3.9	0.255E+02	0.93	2.18
19.71	11.22	0.00	3.9	0.255E+02	0.93	2.18
19.93	11.25	0.00	3.9	0.254E+02	0.93	2.18
20.16	11.27	0.00	3.9	0.254E+02	0.93	2.19
20.38	11.30	0.00	4.0	0.253E+02	0.93	2.19
20.60	11.33	0.00	4.0	0.252E+02	0.93	2.19
20.83	11.35	0.00	4.0	0.252E+02	0.93	2.20
21.05	11.38	0.00	4.0	0.251E+02	0.93	2.20
21.27	11.40	0.00	4.0	0.251E+02	0.93	2.21
21.50	11.43	0.00	4.0	0.250E+02	0.93	2.21
21.72	11.45	0.00	4.0	0.250E+02	0.93	2.21
21.94	11.47	0.00	4.0	0.249E+02	0.93	2.22
22.17	11.50	0.00	4.0	0.249E+02	0.93	2.22
22.39	11.52	0.00	4.0	0.248E+02	0.93	2.22
22.62	11.54	0.00	4.0	0.248E+02	0.93	2.23
22.84	11.56	0.00	4.0	0.247E+02	0.93	2.23
23.06	11.58	0.00	4.1	0.247E+02	0.93	2.24
23.29	11.60	0.00	4.1	0.246E+02	0.93	2.24
23.51	11.62	0.00	4.1	0.246E+02	0.93	2.24

23.73	11.63	0.00	4.1	0.245E+02	0.93	2.25
23.96	11.65	0.00	4.1	0.245E+02	0.93	2.25
24.18	11.67	0.00	4.1	0.244E+02	0.93	2.25
24.41	11.68	0.00	4.1	0.244E+02	0.93	2.26
24.63	11.70	0.00	4.1	0.243E+02	0.93	2.26
24.86	11.71	0.00	4.1	0.243E+02	0.93	2.26
25.08	11.73	0.00	4.1	0.242E+02	0.93	2.27
25.30	11.74	0.00	4.1	0.242E+02	0.93	2.27
25.53	11.75	0.00	4.1	0.241E+02	0.93	2.27
25.75	11.77	0.00	4.1	0.241E+02	0.93	2.28
25.98	11.78	0.00	4.2	0.241E+02	0.93	2.28
26.20	11.79	0.00	4.2	0.240E+02	0.93	2.29
26.43	11.80	0.00	4.2	0.240E+02	0.93	2.29
26.65	11.81	0.00	4.2	0.239E+02	0.93	2.29
26.87	11.82	0.00	4.2	0.239E+02	0.93	2.30
27.10	11.83	0.00	4.2	0.238E+02	0.93	2.30
27.32	11.84	0.00	4.2	0.238E+02	0.93	2.30
27.55	11.85	0.00	4.2	0.238E+02	0.93	2.31
27.77	11.85	0.00	4.2	0.237E+02	0.93	2.31
28.00	11.86	0.00	4.2	0.237E+02	0.93	2.31
28.22	11.87	0.00	4.2	0.236E+02	0.93	2.32
28.45	11.87	0.00	4.2	0.236E+02	0.93	2.32
28.67	11.88	0.00	4.2	0.236E+02	0.93	2.32
28.90	11.88	0.00	4.3	0.235E+02	0.93	2.33
29.12	11.89	0.00	4.3	0.235E+02	0.93	2.33
29.35	11.89	0.00	4.3	0.234E+02	0.93	2.33
29.57	11.89	0.00	4.3	0.234E+02	0.93	2.34
29.79	11.90	0.00	4.3	0.234E+02	0.93	2.34
30.02	11.90	0.00	4.3	0.233E+02	0.93	2.34
30.24	11.90	0.00	4.3	0.233E+02	0.93	2.35
30.47	11.90	0.00	4.3	0.232E+02	0.93	2.35

** REGULATORY MIXING ZONE BOUNDARY is within the Near-Field Region **
In this prediction interval the plume DOWNSTREAM distance meets or exceeds
the regulatory value = 30.48 m.
This is the extent of the REGULATORY MIXING ZONE.

30.69	11.90	0.00	4.3	0.232E+02	0.93	2.35

Maximum lateral extent of recirculation bubble.

30.92	11.90	0.00	4.3	0.232E+02	0.93	2.36
31.14	11.90	0.00	4.3	0.231E+02	0.93	2.36
31.37	11.90	0.00	4.3	0.231E+02	0.93	2.36
31.59	11.90	0.00	4.3	0.231E+02	0.93	2.37
31.82	11.90	0.00	4.3	0.230E+02	0.93	2.37
32.04	11.89	0.00	4.3	0.230E+02	0.93	2.37
32.27	11.89	0.00	4.4	0.230E+02	0.93	2.37
32.49	11.89	0.00	4.4	0.229E+02	0.93	2.38
32.72	11.88	0.00	4.4	0.229E+02	0.93	2.38
32.94	11.88	0.00	4.4	0.229E+02	0.93	2.38
33.16	11.87	0.00	4.4	0.228E+02	0.93	2.39
33.39	11.86	0.00	4.4	0.228E+02	0.93	2.39
33.61	11.86	0.00	4.4	0.228E+02	0.93	2.39
33.84	11.85	0.00	4.4	0.227E+02	0.93	2.40
34.06	11.84	0.00	4.4	0.227E+02	0.93	2.40
34.29	11.84	0.00	4.4	0.227E+02	0.93	2.40
34.51	11.83	0.00	4.4	0.226E+02	0.93	2.41
34.74	11.82	0.00	4.4	0.226E+02	0.93	2.41
34.96	11.81	0.00	4.4	0.226E+02	0.93	2.41
35.19	11.80	0.00	4.4	0.225E+02	0.93	2.42

35.41	11.79	0.00	4.4	0.225E+02	0.93	2.42
35.63	11.78	0.00	4.5	0.225E+02	0.93	2.42
35.86	11.76	0.00	4.5	0.224E+02	0.93	2.42
36.08	11.75	0.00	4.5	0.224E+02	0.93	2.43
36.31	11.74	0.00	4.5	0.224E+02	0.93	2.43
36.53	11.73	0.00	4.5	0.223E+02	0.93	2.43
36.76	11.71	0.00	4.5	0.223E+02	0.93	2.44
36.98	11.70	0.00	4.5	0.223E+02	0.93	2.44
37.20	11.68	0.00	4.5	0.222E+02	0.93	2.44
37.43	11.67	0.00	4.5	0.222E+02	0.93	2.45
37.65	11.65	0.00	4.5	0.222E+02	0.93	2.45
37.88	11.64	0.00	4.5	0.222E+02	0.93	2.45
38.10	11.62	0.00	4.5	0.221E+02	0.93	2.45
38.33	11.60	0.00	4.5	0.221E+02	0.93	2.46
38.55	11.58	0.00	4.5	0.221E+02	0.93	2.46
38.77	11.57	0.00	4.5	0.220E+02	0.93	2.46
39.00	11.55	0.00	4.5	0.220E+02	0.93	2.47
39.22	11.53	0.00	4.5	0.220E+02	0.93	2.47
39.44	11.51	0.00	4.6	0.220E+02	0.93	2.47
39.67	11.49	0.00	4.6	0.219E+02	0.93	2.47
39.89	11.47	0.00	4.6	0.219E+02	0.93	2.48
40.12	11.45	0.00	4.6	0.219E+02	0.93	2.48
40.34	11.42	0.00	4.6	0.218E+02	0.93	2.48
40.56	11.40	0.00	4.6	0.218E+02	0.93	2.49
40.79	11.38	0.00	4.6	0.218E+02	0.93	2.49
41.01	11.36	0.00	4.6	0.218E+02	0.93	2.49
41.23	11.33	0.00	4.6	0.217E+02	0.93	2.50
41.46	11.31	0.00	4.6	0.217E+02	0.93	2.50
41.68	11.28	0.00	4.6	0.217E+02	0.93	2.50
41.90	11.26	0.00	4.6	0.217E+02	0.93	2.50
42.13	11.23	0.00	4.6	0.216E+02	0.93	2.51
42.35	11.21	0.00	4.6	0.216E+02	0.93	2.51
42.57	11.18	0.00	4.6	0.216E+02	0.93	2.51
42.80	11.15	0.00	4.6	0.216E+02	0.93	2.52
43.02	11.13	0.00	4.6	0.215E+02	0.93	2.52
43.24	11.10	0.00	4.6	0.215E+02	0.93	2.52
43.47	11.07	0.00	4.7	0.215E+02	0.93	2.52
43.69	11.04	0.00	4.7	0.215E+02	0.93	2.53
43.91	11.01	0.00	4.7	0.214E+02	0.93	2.53
44.13	10.98	0.00	4.7	0.214E+02	0.93	2.53
44.36	10.95	0.00	4.7	0.214E+02	0.93	2.54
44.58	10.92	0.00	4.7	0.214E+02	0.93	2.54
44.80	10.89	0.00	4.7	0.213E+02	0.93	2.54
45.02	10.86	0.00	4.7	0.213E+02	0.93	2.54
45.25	10.82	0.00	4.7	0.213E+02	0.93	2.55
45.47	10.79	0.00	4.7	0.213E+02	0.93	2.55
45.69	10.76	0.00	4.7	0.212E+02	0.93	2.55
45.91	10.72	0.00	4.7	0.212E+02	0.93	2.56
46.13	10.69	0.00	4.7	0.212E+02	0.93	2.56
46.36	10.65	0.00	4.7	0.212E+02	0.93	2.56
46.58	10.62	0.00	4.7	0.211E+02	0.93	2.56
46.80	10.58	0.00	4.7	0.211E+02	0.93	2.57
47.02	10.55	0.00	4.7	0.211E+02	0.93	2.57
47.24	10.51	0.00	4.7	0.211E+02	0.93	2.57
47.47	10.47	0.00	4.7	0.211E+02	0.93	2.58
47.69	10.44	0.00	4.8	0.210E+02	0.93	2.58
47.91	10.40	0.00	4.8	0.210E+02	0.93	2.58

48.13	10.36	0.00	4.8	0.210E+02	0.93	2.58
48.35	10.32	0.00	4.8	0.210E+02	0.93	2.59
48.57	10.28	0.00	4.8	0.209E+02	0.93	2.59
48.79	10.24	0.00	4.8	0.209E+02	0.93	2.59
49.01	10.20	0.00	4.8	0.209E+02	0.93	2.59
49.24	10.16	0.00	4.8	0.209E+02	0.93	2.60
49.46	10.12	0.00	4.8	0.209E+02	0.93	2.60
49.68	10.08	0.00	4.8	0.208E+02	0.93	2.60
49.90	10.04	0.00	4.8	0.208E+02	0.93	2.61
50.12	10.00	0.00	4.8	0.208E+02	0.93	2.61
50.34	9.95	0.00	4.8	0.208E+02	0.93	2.61
50.56	9.91	0.00	4.8	0.208E+02	0.93	2.61
50.78	9.87	0.00	4.8	0.207E+02	0.93	2.62
51.00	9.82	0.00	4.8	0.207E+02	0.93	2.62
51.22	9.78	0.00	4.8	0.207E+02	0.93	2.62
51.44	9.73	0.00	4.8	0.207E+02	0.93	2.63
51.66	9.69	0.00	4.8	0.206E+02	0.93	2.63
51.88	9.64	0.00	4.8	0.206E+02	0.93	2.63
52.10	9.59	0.00	4.9	0.206E+02	0.93	2.63
52.32	9.55	0.00	4.9	0.206E+02	0.93	2.64
52.54	9.50	0.00	4.9	0.206E+02	0.93	2.64
52.76	9.45	0.00	4.9	0.205E+02	0.93	2.64
52.98	9.40	0.00	4.9	0.205E+02	0.93	2.65
53.20	9.36	0.00	4.9	0.205E+02	0.93	2.65
53.42	9.31	0.00	4.9	0.205E+02	0.93	2.65
53.64	9.26	0.00	4.9	0.205E+02	0.93	2.65
53.86	9.21	0.00	4.9	0.204E+02	0.93	2.66
54.08	9.16	0.00	4.9	0.204E+02	0.93	2.66
54.29	9.11	0.00	4.9	0.204E+02	0.93	2.66
54.51	9.06	0.00	4.9	0.204E+02	0.93	2.66
54.73	9.01	0.00	4.9	0.204E+02	0.93	2.67
54.95	8.95	0.00	4.9	0.203E+02	0.93	2.67
55.17	8.90	0.00	4.9	0.203E+02	0.93	2.67
55.39	8.85	0.00	4.9	0.203E+02	0.93	2.68
55.61	8.80	0.00	4.9	0.203E+02	0.93	2.68
55.82	8.74	0.00	4.9	0.203E+02	0.93	2.68
56.04	8.69	0.00	4.9	0.203E+02	0.93	2.68
56.26	8.63	0.00	4.9	0.202E+02	0.93	2.69
56.48	8.58	0.00	4.9	0.202E+02	0.93	2.69
56.70	8.52	0.00	5.0	0.202E+02	0.93	2.69
56.91	8.47	0.00	5.0	0.202E+02	0.93	2.70
57.13	8.41	0.00	5.0	0.202E+02	0.93	2.70
57.35	8.36	0.00	5.0	0.201E+02	0.93	2.70
57.57	8.30	0.00	5.0	0.201E+02	0.93	2.70
57.78	8.24	0.00	5.0	0.201E+02	0.93	2.71
58.00	8.18	0.00	5.0	0.201E+02	0.93	2.71
58.22	8.13	0.00	5.0	0.201E+02	0.93	2.71
58.44	8.07	0.00	5.0	0.201E+02	0.93	2.72
58.65	8.01	0.00	5.0	0.200E+02	0.93	2.72
58.87	7.95	0.00	5.0	0.200E+02	0.93	2.72
59.09	7.89	0.00	5.0	0.200E+02	0.93	2.72

** WATER QUALITY STANDARD OR CCC HAS BEEN FOUND **
The pollutant concentration in the plume falls below water quality standard or CCC value of 0.200E+02 in the current prediction interval.
This is the spatial extent of concentrations exceeding the water quality standard or CCC value.

59.30	7.83	0.00	5.0	0.200E+02	0.93	2.73

59.52	7.77	0.00	5.0	0.200E+02	0.93	2.73
59.74	7.71	0.00	5.0	0.200E+02	0.93	2.73
59.95	7.65	0.00	5.0	0.199E+02	0.93	2.74
60.17	7.59	0.00	5.0	0.199E+02	0.93	2.74
60.38	7.53	0.00	5.0	0.199E+02	0.93	2.74
60.60	7.46	0.00	5.0	0.199E+02	0.93	2.74
60.82	7.40	0.00	5.0	0.199E+02	0.93	2.75
61.03	7.34	0.00	5.0	0.198E+02	0.93	2.75
61.25	7.28	0.00	5.0	0.198E+02	0.93	2.75
61.46	7.21	0.00	5.0	0.198E+02	0.93	2.76
61.68	7.15	0.00	5.1	0.198E+02	0.93	2.76
61.89	7.08	0.00	5.1	0.198E+02	0.93	2.76
62.11	7.02	0.00	5.1	0.198E+02	0.93	2.76
62.32	6.95	0.00	5.1	0.197E+02	0.93	2.77
62.54	6.89	0.00	5.1	0.197E+02	0.93	2.77
62.75	6.82	0.00	5.1	0.197E+02	0.93	2.77
62.97	6.76	0.00	5.1	0.197E+02	0.93	2.78
63.18	6.69	0.00	5.1	0.197E+02	0.93	2.78
63.40	6.62	0.00	5.1	0.197E+02	0.93	2.78
63.61	6.55	0.00	5.1	0.197E+02	0.93	2.78
63.82	6.49	0.00	5.1	0.196E+02	0.93	2.79
64.04	6.42	0.00	5.1	0.196E+02	0.93	2.79
64.25	6.35	0.00	5.1	0.196E+02	0.93	2.79
64.47	6.28	0.00	5.1	0.196E+02	0.93	2.80
64.68	6.21	0.00	5.1	0.196E+02	0.93	2.80
64.89	6.14	0.00	5.1	0.195E+02	0.93	2.80
65.11	6.07	0.00	5.1	0.195E+02	0.93	2.80
65.32	6.00	0.00	5.1	0.195E+02	0.93	2.81
65.53	5.93	0.00	5.1	0.194E+02	0.93	2.81
65.75	5.86	0.00	5.2	0.194E+02	0.93	2.81
65.96	5.79	0.00	5.2	0.194E+02	0.93	2.82
66.17	5.72	0.00	5.2	0.193E+02	0.93	2.82
66.39	5.64	0.00	5.2	0.193E+02	0.93	2.82
66.60	5.57	0.00	5.2	0.193E+02	0.93	2.82
66.81	5.50	0.00	5.2	0.193E+02	0.93	2.83
67.02	5.43	0.00	5.2	0.192E+02	0.93	2.83
67.24	5.35	0.00	5.2	0.192E+02	0.93	2.83
67.45	5.28	0.00	5.2	0.192E+02	0.93	2.84
67.66	5.20	0.00	5.2	0.191E+02	0.93	2.84
67.87	5.13	0.00	5.2	0.191E+02	0.93	2.84
68.08	5.05	0.00	5.2	0.191E+02	0.93	2.84
68.30	4.98	0.00	5.3	0.190E+02	0.93	2.85
68.51	4.90	0.00	5.3	0.190E+02	0.93	2.85
68.72	4.83	0.00	5.3	0.190E+02	0.93	2.85
68.93	4.75	0.00	5.3	0.189E+02	0.93	2.86
69.14	4.68	0.00	5.3	0.189E+02	0.93	2.86
69.35	4.60	0.00	5.3	0.189E+02	0.93	2.86
69.56	4.52	0.00	5.3	0.189E+02	0.93	2.87
69.78	4.44	0.00	5.3	0.188E+02	0.93	2.87
69.99	4.37	0.00	5.3	0.188E+02	0.93	2.87
70.20	4.29	0.00	5.3	0.188E+02	0.93	2.87
70.41	4.21	0.00	5.3	0.187E+02	0.93	2.88
70.62	4.13	0.00	5.3	0.187E+02	0.93	2.88
70.83	4.05	0.00	5.4	0.187E+02	0.93	2.88
71.04	3.97	0.00	5.4	0.186E+02	0.93	2.89
71.25	3.89	0.00	5.4	0.186E+02	0.93	2.89
71.46	3.81	0.00	5.4	0.186E+02	0.93	2.89

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     71.67      3.73     0.00      5.4 0.186E+02   0.93      2.90
     71.88      3.65     0.00      5.4 0.185E+02   0.93      2.90
     72.09      3.57     0.00      5.4 0.185E+02   0.93      2.90
     72.30      3.49     0.00      5.4 0.185E+02   0.93      2.90
     72.51      3.41     0.00      5.4 0.184E+02   0.93      2.91
     72.71      3.32     0.00      5.4 0.184E+02   0.93      2.91
     72.92      3.24     0.00      5.4 0.184E+02   0.93      2.91
     73.13      3.16     0.00      5.4 0.183E+02   0.93      2.92
     73.34      3.08     0.00      5.5 0.183E+02   0.93      2.92
     73.55      2.99     0.00      5.5 0.183E+02   0.93      2.92
     73.76      2.91     0.00      5.5 0.183E+02   0.93      2.93
     73.97      2.82     0.00      5.5 0.182E+02   0.93      2.93
     74.18      2.74     0.00      5.5 0.182E+02   0.93      2.93
 End of RECIRCULATION BUBBLE for shoreline-attached jet motion.
   Dilution in recirculation bubble =     6.6
   Corresponding concentration      =     0.153E+02
 Cumulative travel time =          97.9222 sec

END OF CORSURF (MOD310): BUOYANT SURFACE JET - NEAR-FIELD REGION
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** End of NEAR-FIELD REGION (NFR) **
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 The initial plume WIDTH/THICKNESS VALUE in the next far-field module will be
  CORRECTED by a factor  1.36 to conserve the mass flux in the far-field!

 Some bank/shore interaction occurs at end of near-field.

 In the next prediction module, the jet/plume centerline will be set
   to follow the bank/shore.
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BEGIN MOD341: BUOYANT AMBIENT SPREADING

 Plume is ATTACHED to RIGHT bank/shore.
   Plume width is now determined from RIGHT bank/shore.

 Plume condition is non-buoyant or weakly buoyant, or, at the end of the NFR
   it is governed by full vertical mixing over the ambient depth,
   or by complete lateral mixing over the channel width.
 Thus, the BUOYANT SPREADING REGIME is ABSENT.

END OF MOD341: BUOYANT AMBIENT SPREADING
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BEGIN MOD361: PASSIVE AMBIENT MIXING IN UNIFORM AMBIENT

  Vertical diffusivity (initial value)   = 0.120E-01 m^2/s
  Horizontal diffusivity (initial value) = 0.600E-01 m^2/s

 Profile definitions:
   BV = Gaussian s.d.*sqrt(pi/2) (46%) thickness, measured vertically
      = or equal to water depth, if fully mixed
   BH = Gaussian s.d.*sqrt(pi/2) (46%) half-width,
        measured horizontally in Y-direction
   S = hydrodynamic centerline dilution
   C = centerline concentration (includes reaction effects, if any)
```

Plume Stage 2 (bank attached):

X	Y	Z	S	C	BV	BH
74.18	0.00	0.00	5.5	0.182E+02	0.93	8.00

Plume interacts with BOTTOM.

The passive diffusion plume becomes VERTICALLY FULLY MIXED within this prediction interval.

80.33	-0.00	0.00	5.6	0.180E+02	0.93	8.11
86.49	-0.00	0.00	5.6	0.177E+02	0.93	8.22
92.65	-0.00	0.00	5.7	0.175E+02	0.93	8.33
98.80	-0.00	0.00	5.8	0.173E+02	0.93	8.43
104.96	-0.00	0.00	5.9	0.170E+02	0.93	8.54
111.12	-0.00	0.00	5.9	0.168E+02	0.93	8.64
117.28	-0.00	0.00	6.0	0.166E+02	0.93	8.75
123.43	-0.00	0.00	6.1	0.165E+02	0.93	8.85
129.59	-0.00	0.00	6.1	0.163E+02	0.93	8.95
135.75	-0.00	0.00	6.2	0.161E+02	0.93	9.05
141.91	-0.00	0.00	6.3	0.159E+02	0.93	9.15
148.06	-0.00	0.00	6.4	0.157E+02	0.93	9.24
154.22	-0.00	0.00	6.4	0.156E+02	0.93	9.34
160.38	-0.00	0.00	6.5	0.154E+02	0.93	9.44
166.53	-0.00	0.00	6.5	0.153E+02	0.93	9.53
172.69	-0.00	0.00	6.6	0.151E+02	0.93	9.62
178.85	-0.00	0.00	6.7	0.150E+02	0.93	9.72
185.01	-0.00	0.00	6.7	0.148E+02	0.93	9.81
191.16	-0.00	0.00	6.8	0.147E+02	0.93	9.90
197.32	-0.00	0.00	6.9	0.146E+02	0.93	9.99
203.48	-0.00	0.00	6.9	0.144E+02	0.93	10.08
209.64	-0.00	0.00	7.0	0.143E+02	0.93	10.17
215.79	-0.00	0.00	7.0	0.142E+02	0.93	10.26
221.95	-0.00	0.00	7.1	0.141E+02	0.93	10.34
228.11	-0.00	0.00	7.2	0.140E+02	0.93	10.43
234.26	-0.00	0.00	7.2	0.138E+02	0.93	10.51
240.42	-0.00	0.00	7.3	0.137E+02	0.93	10.60
246.58	-0.00	0.00	7.3	0.136E+02	0.93	10.68
252.74	-0.00	0.00	7.4	0.135E+02	0.93	10.77
258.89	-0.00	0.00	7.5	0.134E+02	0.93	10.85
265.05	-0.00	0.00	7.5	0.133E+02	0.93	10.93
271.21	-0.00	0.00	7.6	0.132E+02	0.93	11.01
277.37	-0.00	0.00	7.6	0.131E+02	0.93	11.09
283.52	-0.00	0.00	7.7	0.130E+02	0.93	11.17
289.68	-0.00	0.00	7.7	0.129E+02	0.93	11.25
295.84	-0.00	0.00	7.8	0.128E+02	0.93	11.33
302.00	-0.00	0.00	7.8	0.128E+02	0.93	11.41
308.15	-0.00	0.00	7.9	0.127E+02	0.93	11.49
314.31	-0.00	0.00	7.9	0.126E+02	0.93	11.57
320.47	-0.00	0.00	8.0	0.125E+02	0.93	11.65
326.62	-0.00	0.00	8.1	0.124E+02	0.93	11.72
332.78	-0.00	0.00	8.1	0.123E+02	0.93	11.80
338.94	-0.00	0.00	8.2	0.123E+02	0.93	11.87
345.10	-0.00	0.00	8.2	0.122E+02	0.93	11.95
351.25	-0.00	0.00	8.3	0.121E+02	0.93	12.02
357.41	-0.00	0.00	8.3	0.120E+02	0.93	12.10
363.57	-0.00	0.00	8.4	0.120E+02	0.93	12.17
369.73	-0.00	0.00	8.4	0.119E+02	0.93	12.25
375.88	-0.00	0.00	8.5	0.118E+02	0.93	12.32
382.04	-0.00	0.00	8.5	0.117E+02	0.93	12.39

388.20	-0.00	0.00	8.6	0.117E+02	0.93	12.46
394.35	-0.00	0.00	8.6	0.116E+02	0.93	12.54
400.51	-0.00	0.00	8.7	0.115E+02	0.93	12.61
406.67	-0.00	0.00	8.7	0.115E+02	0.93	12.68
412.83	-0.00	0.00	8.8	0.114E+02	0.93	12.75
418.98	-0.00	0.00	8.8	0.114E+02	0.93	12.82
425.14	-0.00	0.00	8.9	0.113E+02	0.93	12.89
431.30	-0.00	0.00	8.9	0.112E+02	0.93	12.96
437.46	-0.00	0.00	8.9	0.112E+02	0.93	13.03
443.61	-0.00	0.00	9.0	0.111E+02	0.93	13.09
449.77	-0.00	0.00	9.0	0.111E+02	0.93	13.16
455.93	-0.00	0.00	9.1	0.110E+02	0.93	13.23
462.08	-0.00	0.00	9.1	0.109E+02	0.93	13.30
468.24	-0.00	0.00	9.2	0.109E+02	0.93	13.37
474.40	-0.00	0.00	9.2	0.108E+02	0.93	13.43
480.56	-0.00	0.00	9.3	0.108E+02	0.93	13.50
486.71	-0.00	0.00	9.3	0.107E+02	0.93	13.56
492.87	-0.00	0.00	9.4	0.107E+02	0.93	13.63
499.03	-0.00	0.00	9.4	0.106E+02	0.93	13.70
505.19	-0.00	0.00	9.5	0.106E+02	0.93	13.76
511.34	-0.00	0.00	9.5	0.105E+02	0.93	13.83
517.50	-0.00	0.00	9.5	0.105E+02	0.93	13.89
523.66	-0.00	0.00	9.6	0.104E+02	0.93	13.96
529.81	-0.00	0.00	9.6	0.104E+02	0.93	14.02
535.97	-0.00	0.00	9.7	0.103E+02	0.93	14.08
542.13	-0.00	0.00	9.7	0.103E+02	0.93	14.15
548.29	-0.00	0.00	9.8	0.102E+02	0.93	14.21
554.44	-0.00	0.00	9.8	0.102E+02	0.93	14.27
560.60	-0.00	0.00	9.8	0.102E+02	0.93	14.34
566.76	-0.00	0.00	9.9	0.101E+02	0.93	14.40
572.92	-0.00	0.00	9.9	0.101E+02	0.93	14.46
579.07	-0.00	0.00	10.0	0.100E+02	0.93	14.52
585.23	-0.00	0.00	10.0	0.998E+01	0.93	14.58
591.39	-0.00	0.00	10.1	0.994E+01	0.93	14.64
597.54	-0.00	0.00	10.1	0.990E+01	0.93	14.71
603.70	-0.00	0.00	10.1	0.986E+01	0.93	14.77
609.86	-0.00	0.00	10.2	0.982E+01	0.93	14.83
616.02	-0.00	0.00	10.2	0.978E+01	0.93	14.89
622.17	-0.00	0.00	10.3	0.974E+01	0.93	14.95
628.33	-0.00	0.00	10.3	0.970E+01	0.93	15.01
634.49	-0.00	0.00	10.4	0.966E+01	0.93	15.07
640.65	-0.00	0.00	10.4	0.962E+01	0.93	15.13
646.80	-0.00	0.00	10.4	0.959E+01	0.93	15.19
652.96	-0.00	0.00	10.5	0.955E+01	0.93	15.24
659.12	-0.00	0.00	10.5	0.951E+01	0.93	15.30
665.28	-0.00	0.00	10.6	0.948E+01	0.93	15.36
671.43	-0.00	0.00	10.6	0.944E+01	0.93	15.42
677.59	-0.00	0.00	10.6	0.941E+01	0.93	15.48
683.75	-0.00	0.00	10.7	0.937E+01	0.93	15.54
689.90	-0.00	0.00	10.7	0.934E+01	0.93	15.59
696.06	-0.00	0.00	10.8	0.930E+01	0.93	15.65
702.22	-0.00	0.00	10.8	0.927E+01	0.93	15.71
708.38	-0.00	0.00	10.8	0.923E+01	0.93	15.76
714.53	-0.00	0.00	10.9	0.920E+01	0.93	15.82
720.69	-0.00	0.00	10.9	0.917E+01	0.93	15.88
726.85	-0.00	0.00	10.9	0.914E+01	0.93	15.93
733.01	-0.00	0.00	11.0	0.910E+01	0.93	15.99

739.16	-0.00	0.00	11.0	0.907E+01	0.93	16.05
745.32	-0.00	0.00	11.1	0.904E+01	0.93	16.10
751.48	-0.00	0.00	11.1	0.901E+01	0.93	16.16
757.63	-0.00	0.00	11.1	0.898E+01	0.93	16.21
763.79	-0.00	0.00	11.2	0.895E+01	0.93	16.27
769.95	-0.00	0.00	11.2	0.892E+01	0.93	16.32
776.11	-0.00	0.00	11.3	0.889E+01	0.93	16.38
782.26	-0.00	0.00	11.3	0.886E+01	0.93	16.43
788.42	-0.00	0.00	11.3	0.883E+01	0.93	16.49
794.58	-0.00	0.00	11.4	0.880E+01	0.93	16.54
800.74	-0.00	0.00	11.4	0.877E+01	0.93	16.59
806.89	-0.00	0.00	11.4	0.874E+01	0.93	16.65
813.05	-0.00	0.00	11.5	0.872E+01	0.93	16.70
819.21	-0.00	0.00	11.5	0.869E+01	0.93	16.76
825.36	-0.00	0.00	11.5	0.866E+01	0.93	16.81
831.52	-0.00	0.00	11.6	0.863E+01	0.93	16.86
837.68	-0.00	0.00	11.6	0.861E+01	0.93	16.92
843.84	-0.00	0.00	11.7	0.858E+01	0.93	16.97
849.99	-0.00	0.00	11.7	0.855E+01	0.93	17.02
856.15	-0.00	0.00	11.7	0.853E+01	0.93	17.07
862.31	-0.00	0.00	11.8	0.850E+01	0.93	17.13
868.47	-0.00	0.00	11.8	0.847E+01	0.93	17.18
874.62	-0.00	0.00	11.8	0.845E+01	0.93	17.23
880.78	-0.00	0.00	11.9	0.842E+01	0.93	17.28
886.94	-0.00	0.00	11.9	0.840E+01	0.93	17.33
893.09	-0.00	0.00	11.9	0.837E+01	0.93	17.39
899.25	-0.00	0.00	12.0	0.835E+01	0.93	17.44
905.41	-0.00	0.00	12.0	0.832E+01	0.93	17.49
911.57	-0.00	0.00	12.0	0.830E+01	0.93	17.54
917.72	-0.00	0.00	12.1	0.828E+01	0.93	17.59
923.88	-0.00	0.00	12.1	0.825E+01	0.93	17.64
930.04	-0.00	0.00	12.2	0.823E+01	0.93	17.69
936.20	-0.00	0.00	12.2	0.820E+01	0.93	17.74
942.35	-0.00	0.00	12.2	0.818E+01	0.93	17.79
948.51	-0.00	0.00	12.3	0.816E+01	0.93	17.84
954.67	-0.00	0.00	12.3	0.814E+01	0.93	17.89
960.82	-0.00	0.00	12.3	0.811E+01	0.93	17.94
966.98	-0.00	0.00	12.4	0.809E+01	0.93	17.99
973.14	-0.00	0.00	12.4	0.807E+01	0.93	18.04
979.30	-0.00	0.00	12.4	0.805E+01	0.93	18.09
985.45	-0.00	0.00	12.5	0.802E+01	0.93	18.14
991.61	-0.00	0.00	12.5	0.800E+01	0.93	18.19
997.77	-0.00	0.00	12.5	0.798E+01	0.93	18.24
1003.93	-0.00	0.00	12.6	0.796E+01	0.93	18.29
1010.08	-0.00	0.00	12.6	0.794E+01	0.93	18.34
1016.24	-0.00	0.00	12.6	0.792E+01	0.93	18.39
1022.40	-0.00	0.00	12.7	0.790E+01	0.93	18.44
1028.55	-0.00	0.00	12.7	0.788E+01	0.93	18.48
1034.71	-0.00	0.00	12.7	0.785E+01	0.93	18.53
1040.87	-0.00	0.00	12.8	0.783E+01	0.93	18.58
1047.03	-0.00	0.00	12.8	0.781E+01	0.93	18.63
1053.18	-0.00	0.00	12.8	0.779E+01	0.93	18.68
1059.34	-0.00	0.00	12.9	0.777E+01	0.93	18.73
1065.50	-0.00	0.00	12.9	0.775E+01	0.93	18.77
1071.66	-0.00	0.00	12.9	0.773E+01	0.93	18.82
1077.81	-0.00	0.00	13.0	0.771E+01	0.93	18.87
1083.97	-0.00	0.00	13.0	0.770E+01	0.93	18.92

1090.13	-0.00	0.00	13.0	0.768E+01	0.93	18.96
1096.28	-0.00	0.00	13.1	0.766E+01	0.93	19.01
1102.44	-0.00	0.00	13.1	0.764E+01	0.93	19.06
1108.60	-0.00	0.00	13.1	0.762E+01	0.93	19.10
1114.76	-0.00	0.00	13.2	0.760E+01	0.93	19.15
1120.91	-0.00	0.00	13.2	0.758E+01	0.93	19.20
1127.07	-0.00	0.00	13.2	0.756E+01	0.93	19.24
1133.23	-0.00	0.00	13.3	0.755E+01	0.93	19.29
1139.39	-0.00	0.00	13.3	0.753E+01	0.93	19.34
1145.54	-0.00	0.00	13.3	0.751E+01	0.93	19.38
1151.70	-0.00	0.00	13.3	0.749E+01	0.93	19.43
1157.86	-0.00	0.00	13.4	0.747E+01	0.93	19.48
1164.01	-0.00	0.00	13.4	0.746E+01	0.93	19.52
1170.17	-0.00	0.00	13.4	0.744E+01	0.93	19.57
1176.33	-0.00	0.00	13.5	0.742E+01	0.93	19.61
1182.49	-0.00	0.00	13.5	0.740E+01	0.93	19.66
1188.64	-0.00	0.00	13.5	0.739E+01	0.93	19.70
1194.80	-0.00	0.00	13.6	0.737E+01	0.93	19.75
1200.96	-0.00	0.00	13.6	0.735E+01	0.93	19.80
1207.11	-0.00	0.00	13.6	0.734E+01	0.93	19.84
1213.27	-0.00	0.00	13.7	0.732E+01	0.93	19.89
1219.43	-0.00	0.00	13.7	0.730E+01	0.93	19.93
1225.59	-0.00	0.00	13.7	0.729E+01	0.93	19.98
1231.74	-0.00	0.00	13.8	0.727E+01	0.93	20.02
1237.90	-0.00	0.00	13.8	0.725E+01	0.93	20.06
1244.06	-0.00	0.00	13.8	0.724E+01	0.93	20.11
1250.22	-0.00	0.00	13.8	0.722E+01	0.93	20.15
1256.37	-0.00	0.00	13.9	0.721E+01	0.93	20.20
1262.53	-0.00	0.00	13.9	0.719E+01	0.93	20.24
1268.69	-0.00	0.00	13.9	0.718E+01	0.93	20.29
1274.84	-0.00	0.00	14.0	0.716E+01	0.93	20.33
1281.00	-0.00	0.00	14.0	0.714E+01	0.93	20.37
1287.16	-0.00	0.00	14.0	0.713E+01	0.93	20.42
1293.32	-0.00	0.00	14.1	0.711E+01	0.93	20.46
1299.47	-0.00	0.00	14.1	0.710E+01	0.93	20.51
1305.63	-0.00	0.00	14.1	0.708E+01	0.93	20.55
1311.79	-0.00	0.00	14.1	0.707E+01	0.93	20.59
1317.94	-0.00	0.00	14.2	0.705E+01	0.93	20.64
1324.10	-0.00	0.00	14.2	0.704E+01	0.93	20.68
1330.26	-0.00	0.00	14.2	0.702E+01	0.93	20.72
1336.42	-0.00	0.00	14.3	0.701E+01	0.93	20.77
1342.57	-0.00	0.00	14.3	0.700E+01	0.93	20.81
1348.73	-0.00	0.00	14.3	0.698E+01	0.93	20.85
1354.89	-0.00	0.00	14.4	0.697E+01	0.93	20.90
1361.05	-0.00	0.00	14.4	0.695E+01	0.93	20.94
1367.20	-0.00	0.00	14.4	0.694E+01	0.93	20.98
1373.36	-0.00	0.00	14.4	0.692E+01	0.93	21.02
1379.52	-0.00	0.00	14.5	0.691E+01	0.93	21.07
1385.67	-0.00	0.00	14.5	0.690E+01	0.93	21.11
1391.83	-0.00	0.00	14.5	0.688E+01	0.93	21.15
1397.99	-0.00	0.00	14.6	0.687E+01	0.93	21.19
1404.15	-0.00	0.00	14.6	0.685E+01	0.93	21.24
1410.30	-0.00	0.00	14.6	0.684E+01	0.93	21.28
1416.46	-0.00	0.00	14.6	0.683E+01	0.93	21.32
1422.62	-0.00	0.00	14.7	0.681E+01	0.93	21.36
1428.77	-0.00	0.00	14.7	0.680E+01	0.93	21.40
1434.93	-0.00	0.00	14.7	0.679E+01	0.93	21.45

1441.09	-0.00	0.00	14.8	0.677E+01	0.93	21.49
1447.25	-0.00	0.00	14.8	0.676E+01	0.93	21.53
1453.40	-0.00	0.00	14.8	0.675E+01	0.93	21.57
1459.56	-0.00	0.00	14.8	0.674E+01	0.93	21.61
1465.72	-0.00	0.00	14.9	0.672E+01	0.93	21.65
1471.88	-0.00	0.00	14.9	0.671E+01	0.93	21.70
1478.03	-0.00	0.00	14.9	0.670E+01	0.93	21.74
1484.19	-0.00	0.00	15.0	0.668E+01	0.93	21.78
1490.35	-0.00	0.00	15.0	0.667E+01	0.93	21.82
1496.50	-0.00	0.00	15.0	0.666E+01	0.93	21.86
1502.66	-0.00	0.00	15.0	0.665E+01	0.93	21.90
1508.82	-0.00	0.00	15.1	0.663E+01	0.93	21.94
1514.98	-0.00	0.00	15.1	0.662E+01	0.93	21.98
1521.13	-0.00	0.00	15.1	0.661E+01	0.93	22.02
1527.29	-0.00	0.00	15.2	0.660E+01	0.93	22.06
1533.45	-0.00	0.00	15.2	0.659E+01	0.93	22.10
1539.60	-0.00	0.00	15.2	0.657E+01	0.93	22.14
1545.76	-0.00	0.00	15.2	0.656E+01	0.93	22.19
1551.92	-0.00	0.00	15.3	0.655E+01	0.93	22.23
1558.08	-0.00	0.00	15.3	0.654E+01	0.93	22.27
1564.23	-0.00	0.00	15.3	0.653E+01	0.93	22.31
1570.39	-0.00	0.00	15.4	0.651E+01	0.93	22.35
1576.55	-0.00	0.00	15.4	0.650E+01	0.93	22.39
1582.71	-0.00	0.00	15.4	0.649E+01	0.93	22.43
1588.86	-0.00	0.00	15.4	0.648E+01	0.93	22.47
1595.02	-0.00	0.00	15.5	0.647E+01	0.93	22.51
1601.18	-0.00	0.00	15.5	0.646E+01	0.93	22.55
1607.33	-0.00	0.00	15.5	0.645E+01	0.93	22.59
1613.49	-0.00	0.00	15.5	0.643E+01	0.93	22.62
1619.65	-0.00	0.00	15.6	0.642E+01	0.93	22.66
1625.81	-0.00	0.00	15.6	0.641E+01	0.93	22.70
1631.96	-0.00	0.00	15.6	0.640E+01	0.93	22.74
1638.12	-0.00	0.00	15.7	0.639E+01	0.93	22.78
1644.28	-0.00	0.00	15.7	0.638E+01	0.93	22.82
1650.43	-0.00	0.00	15.7	0.637E+01	0.93	22.86
1656.59	-0.00	0.00	15.7	0.636E+01	0.93	22.90
1662.75	-0.00	0.00	15.8	0.635E+01	0.93	22.94
1668.91	-0.00	0.00	15.8	0.633E+01	0.93	22.98
1675.06	-0.00	0.00	15.8	0.632E+01	0.93	23.02
1681.22	-0.00	0.00	15.8	0.631E+01	0.93	23.06
1687.38	-0.00	0.00	15.9	0.630E+01	0.93	23.10
1693.54	-0.00	0.00	15.9	0.629E+01	0.93	23.13
1699.69	-0.00	0.00	15.9	0.628E+01	0.93	23.17
1705.85	-0.00	0.00	15.9	0.627E+01	0.93	23.21
1712.01	-0.00	0.00	16.0	0.626E+01	0.93	23.25
1718.16	-0.00	0.00	16.0	0.625E+01	0.93	23.29
1724.32	-0.00	0.00	16.0	0.624E+01	0.93	23.33
1730.48	-0.00	0.00	16.1	0.623E+01	0.93	23.37
1736.64	-0.00	0.00	16.1	0.622E+01	0.93	23.40
1742.79	-0.00	0.00	16.1	0.621E+01	0.93	23.44
1748.95	-0.00	0.00	16.1	0.620E+01	0.93	23.48
1755.11	-0.00	0.00	16.2	0.619E+01	0.93	23.52
1761.26	-0.00	0.00	16.2	0.618E+01	0.93	23.56
1767.42	-0.00	0.00	16.2	0.617E+01	0.93	23.59
1773.58	-0.00	0.00	16.2	0.616E+01	0.93	23.63
1779.74	-0.00	0.00	16.3	0.615E+01	0.93	23.67
1785.89	-0.00	0.00	16.3	0.614E+01	0.93	23.71

1792.05	-0.00	0.00	16.3	0.613E+01	0.93	23.75
1798.21	-0.00	0.00	16.3	0.612E+01	0.93	23.78
1804.37	-0.00	0.00	16.4	0.611E+01	0.93	23.82
1810.52	-0.00	0.00	16.4	0.610E+01	0.93	23.86
1816.68	-0.00	0.00	16.4	0.609E+01	0.93	23.90
1822.84	-0.00	0.00	16.4	0.608E+01	0.93	23.93
1828.99	-0.00	0.00	16.5	0.607E+01	0.93	23.97
1835.15	-0.00	0.00	16.5	0.606E+01	0.93	24.01
1841.31	-0.00	0.00	16.5	0.605E+01	0.93	24.05
1847.47	-0.00	0.00	16.5	0.604E+01	0.93	24.08
1853.62	-0.00	0.00	16.6	0.604E+01	0.93	24.12
1859.78	-0.00	0.00	16.6	0.603E+01	0.93	24.16
1865.94	-0.00	0.00	16.6	0.602E+01	0.93	24.19
1872.09	-0.00	0.00	16.6	0.601E+01	0.93	24.23
1878.25	-0.00	0.00	16.7	0.600E+01	0.93	24.27
1884.41	-0.00	0.00	16.7	0.599E+01	0.93	24.30
1890.57	-0.00	0.00	16.7	0.598E+01	0.93	24.34
1896.72	-0.00	0.00	16.7	0.597E+01	0.93	24.38
1902.88	-0.00	0.00	16.8	0.596E+01	0.93	24.42
1909.04	-0.00	0.00	16.8	0.595E+01	0.93	24.45
1915.20	-0.00	0.00	16.8	0.594E+01	0.93	24.49
1921.35	-0.00	0.00	16.8	0.594E+01	0.93	24.52
1927.51	-0.00	0.00	16.9	0.593E+01	0.93	24.56
1933.67	-0.00	0.00	16.9	0.592E+01	0.93	24.60
1939.82	-0.00	0.00	16.9	0.591E+01	0.93	24.63
1945.98	-0.00	0.00	16.9	0.590E+01	0.93	24.67
1952.14	-0.00	0.00	17.0	0.589E+01	0.93	24.71
1958.30	-0.00	0.00	17.0	0.588E+01	0.93	24.74
1964.45	-0.00	0.00	17.0	0.587E+01	0.93	24.78
1970.61	-0.00	0.00	17.0	0.587E+01	0.93	24.82
1976.77	-0.00	0.00	17.1	0.586E+01	0.93	24.85
1982.93	-0.00	0.00	17.1	0.585E+01	0.93	24.89
1989.08	-0.00	0.00	17.1	0.584E+01	0.93	24.92
1995.24	-0.00	0.00	17.1	0.583E+01	0.93	24.96
2001.40	-0.00	0.00	17.2	0.582E+01	0.93	25.00
2007.55	-0.00	0.00	17.2	0.582E+01	0.93	25.03
2013.71	-0.00	0.00	17.2	0.581E+01	0.93	25.07
2019.87	-0.00	0.00	17.2	0.580E+01	0.93	25.10
2026.03	-0.00	0.00	17.3	0.579E+01	0.93	25.14
2032.18	-0.00	0.00	17.3	0.578E+01	0.93	25.17
2038.34	-0.00	0.00	17.3	0.577E+01	0.93	25.21
2044.50	-0.00	0.00	17.3	0.577E+01	0.93	25.24
2050.65	-0.00	0.00	17.4	0.576E+01	0.93	25.28
2056.81	-0.00	0.00	17.4	0.575E+01	0.93	25.32
2062.97	-0.00	0.00	17.4	0.574E+01	0.93	25.35
2069.13	-0.00	0.00	17.4	0.573E+01	0.93	25.39
2075.28	-0.00	0.00	17.5	0.573E+01	0.93	25.42
2081.44	-0.00	0.00	17.5	0.572E+01	0.93	25.46
2087.60	-0.00	0.00	17.5	0.571E+01	0.93	25.49
2093.76	-0.00	0.00	17.5	0.570E+01	0.93	25.53
2099.91	-0.00	0.00	17.6	0.569E+01	0.93	25.56
2106.07	-0.00	0.00	17.6	0.569E+01	0.93	25.60
2112.23	-0.00	0.00	17.6	0.568E+01	0.93	25.63
2118.38	-0.00	0.00	17.6	0.567E+01	0.93	25.67
2124.54	-0.00	0.00	17.7	0.566E+01	0.93	25.70
2130.70	-0.00	0.00	17.7	0.566E+01	0.93	25.74
2136.86	-0.00	0.00	17.7	0.565E+01	0.93	25.77

2143.01	-0.00	0.00	17.7	0.564E+01	0.93	25.81
2149.17	-0.00	0.00	17.8	0.563E+01	0.93	25.84
2155.33	-0.00	0.00	17.8	0.563E+01	0.93	25.88
2161.48	-0.00	0.00	17.8	0.562E+01	0.93	25.91
2167.64	-0.00	0.00	17.8	0.561E+01	0.93	25.94
2173.80	-0.00	0.00	17.8	0.560E+01	0.93	25.98
2179.96	-0.00	0.00	17.9	0.560E+01	0.93	26.01
2186.11	-0.00	0.00	17.9	0.559E+01	0.93	26.05
2192.27	-0.00	0.00	17.9	0.558E+01	0.93	26.08
2198.43	-0.00	0.00	17.9	0.557E+01	0.93	26.12
2204.59	-0.00	0.00	18.0	0.557E+01	0.93	26.15
2210.74	-0.00	0.00	18.0	0.556E+01	0.93	26.19
2216.90	-0.00	0.00	18.0	0.555E+01	0.93	26.22
2223.06	-0.00	0.00	18.0	0.554E+01	0.93	26.25
2229.21	-0.00	0.00	18.1	0.554E+01	0.93	26.29
2235.37	-0.00	0.00	18.1	0.553E+01	0.93	26.32
2241.53	-0.00	0.00	18.1	0.552E+01	0.93	26.36
2247.69	-0.00	0.00	18.1	0.552E+01	0.93	26.39
2253.84	-0.00	0.00	18.2	0.551E+01	0.93	26.42
2260.00	-0.00	0.00	18.2	0.550E+01	0.93	26.46
2266.16	-0.00	0.00	18.2	0.549E+01	0.93	26.49
2272.31	-0.00	0.00	18.2	0.549E+01	0.93	26.53
2278.47	-0.00	0.00	18.2	0.548E+01	0.93	26.56
2284.63	-0.00	0.00	18.3	0.547E+01	0.93	26.59
2290.79	-0.00	0.00	18.3	0.547E+01	0.93	26.63
2296.94	-0.00	0.00	18.3	0.546E+01	0.93	26.66
2303.10	-0.00	0.00	18.3	0.545E+01	0.93	26.69
2309.26	-0.00	0.00	18.4	0.545E+01	0.93	26.73
2315.42	-0.00	0.00	18.4	0.544E+01	0.93	26.76
2321.57	-0.00	0.00	18.4	0.543E+01	0.93	26.79
2327.73	-0.00	0.00	18.4	0.543E+01	0.93	26.83
2333.89	-0.00	0.00	18.5	0.542E+01	0.93	26.86
2340.04	-0.00	0.00	18.5	0.541E+01	0.93	26.89
2346.20	-0.00	0.00	18.5	0.541E+01	0.93	26.93
2352.36	-0.00	0.00	18.5	0.540E+01	0.93	26.96
2358.52	-0.00	0.00	18.5	0.539E+01	0.93	26.99
2364.67	-0.00	0.00	18.6	0.539E+01	0.93	27.03
2370.83	-0.00	0.00	18.6	0.538E+01	0.93	27.06
2376.99	-0.00	0.00	18.6	0.537E+01	0.93	27.09
2383.14	-0.00	0.00	18.6	0.537E+01	0.93	27.13
2389.30	-0.00	0.00	18.7	0.536E+01	0.93	27.16
2395.46	-0.00	0.00	18.7	0.535E+01	0.93	27.19
2401.62	-0.00	0.00	18.7	0.535E+01	0.93	27.23
2407.77	-0.00	0.00	18.7	0.534E+01	0.93	27.26
2413.93	-0.00	0.00	18.7	0.533E+01	0.93	27.29
2420.09	-0.00	0.00	18.8	0.533E+01	0.93	27.32
2426.25	-0.00	0.00	18.8	0.532E+01	0.93	27.36
2432.40	-0.00	0.00	18.8	0.531E+01	0.93	27.39
2438.56	-0.00	0.00	18.8	0.531E+01	0.93	27.42
2444.72	-0.00	0.00	18.9	0.530E+01	0.93	27.45
2450.87	-0.00	0.00	18.9	0.530E+01	0.93	27.49
2457.03	-0.00	0.00	18.9	0.529E+01	0.93	27.52
2463.19	-0.00	0.00	18.9	0.528E+01	0.93	27.55
2469.35	-0.00	0.00	19.0	0.528E+01	0.93	27.59
2475.50	-0.00	0.00	19.0	0.527E+01	0.93	27.62
2481.66	-0.00	0.00	19.0	0.526E+01	0.93	27.65
2487.82	-0.00	0.00	19.0	0.526E+01	0.93	27.68

2493.97	-0.00	0.00	19.0	0.525E+01	0.93	27.71
2500.13	-0.00	0.00	19.1	0.525E+01	0.93	27.75
2506.29	-0.00	0.00	19.1	0.524E+01	0.93	27.78
2512.45	-0.00	0.00	19.1	0.523E+01	0.93	27.81
2518.60	-0.00	0.00	19.1	0.523E+01	0.93	27.84
2524.76	-0.00	0.00	19.1	0.522E+01	0.93	27.88
2530.92	-0.00	0.00	19.2	0.522E+01	0.93	27.91
2537.08	-0.00	0.00	19.2	0.521E+01	0.93	27.94
2543.23	-0.00	0.00	19.2	0.520E+01	0.93	27.97
2549.39	-0.00	0.00	19.2	0.520E+01	0.93	28.00
2555.55	-0.00	0.00	19.3	0.519E+01	0.93	28.04
2561.70	-0.00	0.00	19.3	0.519E+01	0.93	28.07
2567.86	-0.00	0.00	19.3	0.518E+01	0.93	28.10
2574.02	-0.00	0.00	19.3	0.517E+01	0.93	28.13
2580.18	-0.00	0.00	19.3	0.517E+01	0.93	28.16
2586.33	-0.00	0.00	19.4	0.516E+01	0.93	28.20
2592.49	-0.00	0.00	19.4	0.516E+01	0.93	28.23
2598.65	-0.00	0.00	19.4	0.515E+01	0.93	28.26
2604.80	-0.00	0.00	19.4	0.515E+01	0.93	28.29
2610.96	-0.00	0.00	19.5	0.514E+01	0.93	28.32
2617.12	-0.00	0.00	19.5	0.513E+01	0.93	28.35
2623.28	-0.00	0.00	19.5	0.513E+01	0.93	28.39
2629.43	-0.00	0.00	19.5	0.512E+01	0.93	28.42
2635.59	-0.00	0.00	19.5	0.512E+01	0.93	28.45
2641.75	-0.00	0.00	19.6	0.511E+01	0.93	28.48
2647.91	-0.00	0.00	19.6	0.511E+01	0.93	28.51
2654.06	-0.00	0.00	19.6	0.510E+01	0.93	28.54
2660.22	-0.00	0.00	19.6	0.509E+01	0.93	28.57
2666.38	-0.00	0.00	19.7	0.509E+01	0.93	28.61
2672.53	-0.00	0.00	19.7	0.508E+01	0.93	28.64
2678.69	-0.00	0.00	19.7	0.508E+01	0.93	28.67
2684.85	-0.00	0.00	19.7	0.507E+01	0.93	28.70
2691.01	-0.00	0.00	19.7	0.507E+01	0.93	28.73
2697.16	-0.00	0.00	19.8	0.506E+01	0.93	28.76
2703.32	-0.00	0.00	19.8	0.506E+01	0.93	28.79
2709.48	-0.00	0.00	19.8	0.505E+01	0.93	28.82
2715.64	-0.00	0.00	19.8	0.504E+01	0.93	28.85
2721.79	-0.00	0.00	19.8	0.504E+01	0.93	28.89
2727.95	-0.00	0.00	19.9	0.503E+01	0.93	28.92
2734.11	-0.00	0.00	19.9	0.503E+01	0.93	28.95
2740.26	-0.00	0.00	19.9	0.502E+01	0.93	28.98
2746.42	-0.00	0.00	19.9	0.502E+01	0.93	29.01
2752.58	-0.00	0.00	19.9	0.501E+01	0.93	29.04
2758.74	-0.00	0.00	20.0	0.501E+01	0.93	29.07
2764.89	-0.00	0.00	20.0	0.500E+01	0.93	29.10
2771.05	-0.00	0.00	20.0	0.500E+01	0.93	29.13
2777.21	-0.00	0.00	20.0	0.499E+01	0.93	29.16
2783.36	-0.00	0.00	20.1	0.499E+01	0.93	29.19
2789.52	-0.00	0.00	20.1	0.498E+01	0.93	29.23
2795.68	-0.00	0.00	20.1	0.498E+01	0.93	29.26
2801.84	-0.00	0.00	20.1	0.497E+01	0.93	29.29
2807.99	-0.00	0.00	20.1	0.497E+01	0.93	29.32
2814.15	-0.00	0.00	20.2	0.496E+01	0.93	29.35
2820.31	-0.00	0.00	20.2	0.495E+01	0.93	29.38
2826.47	-0.00	0.00	20.2	0.495E+01	0.93	29.41
2832.62	-0.00	0.00	20.2	0.494E+01	0.93	29.44
2838.78	-0.00	0.00	20.2	0.494E+01	0.93	29.47

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  2844.94    -0.00    0.00    20.3 0.493E+01   0.93    29.50
  2851.09    -0.00    0.00    20.3 0.493E+01   0.93    29.53
  2857.25    -0.00    0.00    20.3 0.492E+01   0.93    29.56
  2863.41    -0.00    0.00    20.3 0.492E+01   0.93    29.59
  2869.57    -0.00    0.00    20.3 0.491E+01   0.93    29.62
  2875.72    -0.00    0.00    20.4 0.491E+01   0.93    29.65
  2881.88    -0.00    0.00    20.4 0.490E+01   0.93    29.68
  2888.04    -0.00    0.00    20.4 0.490E+01   0.93    29.71
  2894.19    -0.00    0.00    20.4 0.489E+01   0.93    29.74
  2900.35    -0.00    0.00    20.5 0.489E+01   0.93    29.77
  2906.51    -0.00    0.00    20.5 0.488E+01   0.93    29.80
  2912.67    -0.00    0.00    20.5 0.488E+01   0.93    29.83
  2918.82    -0.00    0.00    20.5 0.487E+01   0.93    29.86
  2924.98    -0.00    0.00    20.5 0.487E+01   0.93    29.89
  2931.14    -0.00    0.00    20.6 0.486E+01   0.93    29.92
  2937.30    -0.00    0.00    20.6 0.486E+01   0.93    29.95
  2943.45    -0.00    0.00    20.6 0.486E+01   0.93    29.98
  2949.61    -0.00    0.00    20.6 0.485E+01   0.93    30.01
  2955.77    -0.00    0.00    20.6 0.485E+01   0.93    30.04
  2961.92    -0.00    0.00    20.7 0.484E+01   0.93    30.07
  2968.08    -0.00    0.00    20.7 0.484E+01   0.93    30.10
  2974.24    -0.00    0.00    20.7 0.483E+01   0.93    30.13
  2980.40    -0.00    0.00    20.7 0.483E+01   0.93    30.16
  2986.55    -0.00    0.00    20.7 0.482E+01   0.93    30.19
  2992.71    -0.00    0.00    20.8 0.482E+01   0.93    30.22
  2998.87    -0.00    0.00    20.8 0.481E+01   0.93    30.25
  3005.02    -0.00    0.00    20.8 0.481E+01   0.93    30.28
  3011.18    -0.00    0.00    20.8 0.480E+01   0.93    30.31
  3017.34    -0.00    0.00    20.8 0.480E+01   0.93    30.34
  3023.50    -0.00    0.00    20.9 0.479E+01   0.93    30.37
  3029.65    -0.00    0.00    20.9 0.479E+01   0.93    30.40
  3035.81    -0.00    0.00    20.9 0.478E+01   0.93    30.43
  3041.97    -0.00    0.00    20.9 0.478E+01   0.93    30.46
The passive diffusion plume becomes LATERALLY FULLY MIXED over the channel
  width during the current prediction interval.
  3048.13    -0.00    0.00    20.9 0.477E+01   0.93    30.48
Effluent is FULLY MIXED over the entire channel cross-section.
Except for possible far-field decay or reaction processes, there are
  NO FURTHER CHANGES with downstream direction.
  3054.28    -0.00    0.00    20.9 0.478E+01   0.93    30.48
  3060.44    -0.00    0.00    20.9 0.478E+01   0.93    30.48
  3066.60    -0.00    0.00    20.9 0.478E+01   0.93    30.48
  3072.75    -0.00    0.00    20.9 0.478E+01   0.93    30.48
  3078.91    -0.00    0.00    20.9 0.478E+01   0.93    30.48
  3085.07    -0.00    0.00    20.9 0.478E+01   0.93    30.48
  3091.23    -0.00    0.00    20.9 0.478E+01   0.93    30.48
  3097.38    -0.00    0.00    20.9 0.478E+01   0.93    30.48
  3103.54    -0.00    0.00    20.9 0.478E+01   0.93    30.48
  3109.70    -0.00    0.00    20.9 0.478E+01   0.93    30.48
  3115.85    -0.00    0.00    20.9 0.478E+01   0.93    30.48
  3122.01    -0.00    0.00    20.9 0.478E+01   0.93    30.48
  3128.17    -0.00    0.00    20.9 0.478E+01   0.93    30.48
  3134.33    -0.00    0.00    20.9 0.478E+01   0.93    30.48
  3140.48    -0.00    0.00    20.9 0.478E+01   0.93    30.48
  3146.64    -0.00    0.00    20.9 0.478E+01   0.93    30.48
  3152.80    -0.00    0.00    20.9 0.478E+01   0.93    30.48
  3158.96    -0.00    0.00    20.9 0.478E+01   0.93    30.48
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3165.11	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3171.27	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3177.43	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3183.58	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3189.74	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3195.90	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3202.06	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3208.21	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3214.37	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3220.53	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3226.68	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3232.84	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3239.00	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3245.16	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3251.31	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3257.47	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3263.63	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3269.79	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3275.94	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3282.10	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3288.26	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3294.41	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3300.57	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3306.73	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3312.89	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3319.04	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3325.20	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3331.36	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3337.51	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3343.67	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3349.83	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3355.99	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3362.14	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3368.30	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3374.46	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3380.62	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3386.77	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3392.93	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3399.09	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3405.24	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3411.40	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3417.56	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3423.72	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3429.87	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3436.03	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3442.19	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3448.34	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3454.50	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3460.66	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3466.82	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3472.97	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3479.13	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3485.29	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3491.45	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3497.60	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3503.76	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3509.92	-0.00	0.00	20.9	0.478E+01	0.93	30.48

3516.07	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3522.23	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3528.39	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3534.55	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3540.70	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3546.86	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3553.02	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3559.18	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3565.33	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3571.49	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3577.65	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3583.80	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3589.96	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3596.12	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3602.28	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3608.43	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3614.59	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3620.75	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3626.90	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3633.06	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3639.22	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3645.38	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3651.53	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3657.69	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3663.85	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3670.01	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3676.16	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3682.32	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3688.48	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3694.63	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3700.79	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3706.95	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3713.11	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3719.26	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3725.42	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3731.58	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3737.73	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3743.89	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3750.05	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3756.21	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3762.36	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3768.52	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3774.68	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3780.84	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3786.99	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3793.15	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3799.31	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3805.46	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3811.62	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3817.78	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3823.94	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3830.09	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3836.25	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3842.41	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3848.56	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3854.72	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3860.88	-0.00	0.00	20.9	0.478E+01	0.93	30.48

3867.04	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3873.19	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3879.35	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3885.51	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3891.67	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3897.82	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3903.98	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3910.14	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3916.29	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3922.45	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3928.61	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3934.77	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3940.92	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3947.08	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3953.24	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3959.39	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3965.55	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3971.71	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3977.87	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3984.02	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3990.18	-0.00	0.00	20.9	0.478E+01	0.93	30.48
3996.34	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4002.50	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4008.65	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4014.81	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4020.97	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4027.12	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4033.28	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4039.44	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4045.60	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4051.75	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4057.91	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4064.07	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4070.22	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4076.38	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4082.54	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4088.70	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4094.85	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4101.01	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4107.17	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4113.33	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4119.48	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4125.64	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4131.80	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4137.95	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4144.11	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4150.27	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4156.43	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4162.58	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4168.74	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4174.90	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4181.06	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4187.21	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4193.37	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4199.53	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4205.68	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4211.84	-0.00	0.00	20.9	0.478E+01	0.93	30.48

4218.00	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4224.16	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4230.31	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4236.47	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4242.63	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4248.78	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4254.94	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4261.10	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4267.26	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4273.41	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4279.57	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4285.73	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4291.89	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4298.04	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4304.20	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4310.36	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4316.51	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4322.67	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4328.83	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4334.99	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4341.14	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4347.30	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4353.46	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4359.61	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4365.77	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4371.93	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4378.09	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4384.24	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4390.40	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4396.56	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4402.72	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4408.87	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4415.03	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4421.19	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4427.34	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4433.50	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4439.66	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4445.82	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4451.97	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4458.13	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4464.29	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4470.44	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4476.60	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4482.76	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4488.92	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4495.07	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4501.23	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4507.39	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4513.55	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4519.70	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4525.86	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4532.02	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4538.17	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4544.33	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4550.49	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4556.65	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4562.80	-0.00	0.00	20.9	0.478E+01	0.93	30.48

4568.96	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4575.12	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4581.27	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4587.43	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4593.59	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4599.75	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4605.90	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4612.06	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4618.22	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4624.38	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4630.53	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4636.69	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4642.85	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4649.00	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4655.16	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4661.32	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4667.48	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4673.63	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4679.79	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4685.95	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4692.10	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4698.26	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4704.42	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4710.58	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4716.73	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4722.89	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4729.05	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4735.21	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4741.36	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4747.52	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4753.68	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4759.83	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4765.99	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4772.15	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4778.31	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4784.46	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4790.62	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4796.78	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4802.94	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4809.09	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4815.25	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4821.41	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4827.56	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4833.72	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4839.88	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4846.04	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4852.19	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4858.35	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4864.51	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4870.66	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4876.82	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4882.98	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4889.14	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4895.29	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4901.45	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4907.61	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4913.77	-0.00	0.00	20.9	0.478E+01	0.93	30.48

4919.92	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4926.08	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4932.24	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4938.39	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4944.55	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4950.71	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4956.87	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4963.02	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4969.18	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4975.34	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4981.49	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4987.65	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4993.81	-0.00	0.00	20.9	0.478E+01	0.93	30.48
4999.97	-0.00	0.00	20.9	0.478E+01	0.93	30.48

Cumulative travel time = 7705.1421 sec

Simulation limit based on maximum specified distance = 5000.00 m.
This is the REGION OF INTEREST limitation.

END OF MOD361: PASSIVE AMBIENT MIXING IN UNIFORM AMBIENT

CORMIX3: Buoyant Surface Discharges End of Prediction File

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Appendix C – Sensitivity Analysis

SENSITIVITY ANALYSIS RESULTS

Table B-1. Results for model scenario 1, base condition: ambient flow= 617 cfs and effluent flow= 20 mgd (31 cfs)

width (m) of the discharge outlet	depth (m) of the discharge outlet	Effluent is fully mixed at m
1	0.22	2809
	0.3	2978
	0.5	3119
2	0.134	2898
	0.2	3048
	0.5	3206

Table B-2. Results for model scenario 2, base condition: ambient flow= 180 cfs and effluent flow= 20 mgd (31 cfs)

width (m) of the discharge outlet	depth (m) of the discharge outlet	Effluent is fully mixed at m	S=2.84 at m	Dilution (S) at 400 m
1	0.22	2557	9.68	5.3
	0.3	3255	21.14	4.7
	0.5	4036	43.27	3.9
2	0.134	1508	2.1	6.1
	0.2	3007	11.67	4.9
	0.5	4773	292	3

Table B-3. Results for model scenario 3: ambient flow= 157 cfs and effluent flow= 20 mgd (31 cfs)

width (m) of the discharge outlet	depth (m) of the discharge outlet	Effluent is fully mixed at m	S=2.84 at m	Dilution (S) at 400 m
1	0.22	2570	10.88	4.8
	0.3	3325	25.52	4.3
	0.5	4182	53.7	3.6
2	0.134	718	2.13	5.9
	0.2	2731	13.8	4.7
	0.5	>5000	427.5	2.8

Table B-4. Results for model scenario 4: ambient flow= 15000 cfs and effluent flow= 20 mgd (31 cfs)

width (m) of the discharge outlet	depth (m) of the discharge outlet	Effluent is fully mixed at m
1	0.22	876
	0.3	867
	0.5	860
2	0.134	872
	0.2	870
	0.5	859

Table B-5. Results for model scenario 5: ambient flow= 617 cfs and effluent flow= 11.4 mgd (17.7 cfs)

width (m) of the discharge outlet	depth (m) of the discharge outlet	Effluent is fully mixed at m
1	0.14	2980
	0.2	3059
	0.5	3112
2	0.1	3049
	0.2	3118
	0.5	3127

Table B-6. Results for model scenario 6: ambient flow= 157 cfs and effluent flow= 11.4 mgd (17.7 cfs)

width (m) of the discharge outlet	depth (m) of the discharge outlet	Effluent is fully mixed at m
1	0.14	3361
	0.2	4012
	0.5	4920
2	0.1	3277
	0.2	4528
	0.5	>5000

Table B-7. Results for model scenario 7: ambient flow= 180 cfs and effluent flow= 11.4 mgd (17.7 cfs)

width (m) of the discharge outlet	depth (m) of the discharge outlet	Effluent is fully mixed at m
1	0.14	3295
	0.2	3896
	0.5	4680
2	0.1	3544
	0.2	4368
	0.5	4950

Table B-8. Results for model scenario 8: ambient flow= 15000 cfs and effluent flow= 11.4 mgd (17.7 cfs)

width (m) of the discharge outlet	depth (m) of the discharge outlet	Effluent is fully mixed at m
1	0.14	873
	0.2	866
	0.5	859
2	0.1	871
	0.2	862
	0.5	858

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Appendix D – Additional Laboratory Reports

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FEBRUARY 25, 2009 UPSTREAM MONITORING LABORATORY RESULTS

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GeoAnalytical Laboratories, Inc.

1405 Kansas Avenue Modesto, CA 95351 Phone (209) 572-0900 Fax (209) 572-0916

Report # V9B2510

City of Turlock
156 S. Broadway, Ste 270
Turlock, CA 95380

Project: San Joaquin River Study

Date: 03/05/09
Date Rec'd: 02/25/09

PO#

CERTIFICATE OF ANALYSIS

Sample ID: R3
Lab ID: V9B2510-01
Sample Notes:

Date Sampled: 02/25/09
Time: 10:00
Sampler: Jeanette White

Method	RL	MDL	Analyte	Result	Units	Flags	Started	Batch #
524.2	0.50	0.08	1,1,1,2-Tetrachloroethane	ND	ug/L		2/26/09	V000568
	0.50	0.12	1,1,1-Trichloroethane	ND	ug/L			
	0.50	0.20	1,1,2,2-Tetrachloroethane	ND	ug/L			
	0.50	0.14	1,1,2-Trichloroethane	ND	ug/L			
	0.50	0.08	1,1-Dichloroethane	ND	ug/L			
	0.50	0.08	1,1-Dichloroethylene	ND	ug/L			
	0.50	0.08	1,1-Dichloropropene	ND	ug/L			
	0.50	0.10	1,2,3-Trichlorobenzene	ND	ug/L			
	0.50	0.10	1,2,4-Trichlorobenzene	ND	ug/L			
	0.50	0.11	1,2,4-Trimethylbenzene	ND	ug/L			
	0.50	0.13	1,2-Dichlorobenzene	ND	ug/L			
	0.50	0.18	1,2-Dichloroethane	ND	ug/L			
	0.50	0.12	1,2-Dichloropropane	ND	ug/L			
	0.50	0.12	1,3,5-Trimethylbenzene	ND	ug/L			
	0.50	0.13	1,3-Dichlorobenzene	ND	ug/L			
	0.50	0.11	1,3-Dichloropropane	ND	ug/L			
	0.50	0.21	1,3-Dichloropropene (total)	ND	ug/L			
	0.50	0.07	1,4-Dichlorobenzene	ND	ug/L			
	0.50	0.10	2,2-Dichloropropane	ND	ug/L			
	1.00	0.68	2-Chloroethyl Vinyl Ether	ND	ug/L			
	0.50	0.12	2-Chlorotoluene	ND	ug/L			
	0.50	0.13	4-Chlorotoluene	ND	ug/L			
	0.50	0.14	Benzene	ND	ug/L			
	0.50	0.11	Bromobenzene	ND	ug/L			
	0.50	0.12	Bromochloromethane	ND	ug/L			
	1.00	0.17	Bromodichloromethane	ND	ug/L			
	1.00	0.21	Bromoform	ND	ug/L			
	0.50	0.35	Bromomethane	ND	ug/L			
	0.50	0.20	Carbon Tetrachloride	ND	ug/L			
	0.50	0.25	Chloroethane	ND	ug/L			
	1.00	0.16	Chloroform	ND	ug/L			
	0.50	0.31	Chloromethane	ND	ug/L			
	0.50	0.08	cis-1,2-Dichloroethylene	ND	ug/L			
	1.00	0.25	Dibromochloromethane	ND	ug/L			
	0.50	0.21	Dibromomethane	ND	ug/L			
	0.50	0.33	Dichlorodifluoromethane (FREON 12)	ND	ug/L			
	3.00	0.20	Di-isopropyl Ether (DIPE)	ND	ug/L			
	3.00	0.17	Ethyl tert-Butyl Ether (ETBE)	ND	ug/L			
	0.50	0.12	Ethylbenzene	ND	ug/L			
	0.50	0.13	Hexachlorobutadiene	ND	ug/L			
	0.50	0.06	Isopropylbenzene (Cumene)	ND	ug/L			
	0.50	0.22	m,p-Xylene	ND	ug/L			
	3.00	0.20	Methyl tert-Butyl Ether (MTBE)	ND	ug/L			
	0.50	0.43	Methylene Chloride	ND	ug/L			
	0.50	0.09	Monochlorobenzene	ND	ug/L			
	0.50	0.13	n-Butyl Benzene	ND	ug/L			
	0.50	0.11	n-Propyl Benzene	ND	ug/L			
	0.50	0.17	o-Xylene	ND	ug/L			
	0.50	0.11	p-Isopropyltoluene	ND	ug/L			
	0.50	0.12	sec-Butylbenzene	ND	ug/L			
	0.50	0.10	Styrene	ND	ug/L			

GeoAnalytical Laboratories, Inc.

1405 Kansas Avenue Modesto, CA 95351 Phone (209) 572-0900 Fax (209) 572-0916

Report # V9B2510 **Date:** 03/05/09

City of Turlock **Project:** San Joaquin River Study **Date Rec'd:** 02/25/09
156 S. Broadway, Ste 270
Turlock, CA 95380 **PO#**

CERTIFICATE OF ANALYSIS

Sample ID: R3 **Date Sampled:** 02/25/09
Lab ID: V9B2510-01 **Time:** 10:00
Sample Notes: **Sampler:** Jeanette White

Method	RL	MDL	Analyte	Result	Units	Flags	Started	Batch #
524.2	3.00	0.07	Tert-Amyl Methyl Ether(TAME)	ND	ug/L		2/26/09	V000568
	2.00	0.76	tert-Butanol (TBA)	ND	ug/L			
	0.50	0.09	tert-Butylbenzene	ND	ug/L			
	0.50	0.17	Tetrachloroethylene(PCE)	ND	ug/L			
	0.50	0.05	Toluene	ND	ug/L			
	1.00	0.25	Total Trihalomethanes	ND	ug/L			
	0.50	0.12	trans-1,2-Dichloroethylene	ND	ug/L			
	0.50	0.14	Trichloroethylene	ND	ug/L			
	5.00	0.45	Trichlorofluoromethane	ND	ug/L			
	10.0	0.19	Trichlorotrifluoroethane	ND	ug/L			
	0.50	0.33	Vinyl chloride	ND	ug/L			
	0.50	0.59	Xylenes, total	ND	ug/L			

Surrogate	Amnt Spiked	Amnt Recovered	% Recovery	QC Limit %	Surrogate Notes
1,2-Dichloroethane-d4	5.000	5.30	*106 %*	*72-132*	
2-Bromo-1-Chloropropane	5.000	4.61	*92 %*	*71-134*	
4-Bromofluorobenzene	5.000	4.92	*98 %*	*74-132*	

Mario D'Onofrio
Chemist

Donna Keller
Laboratory Director

Certification # 2585

GeoAnalytical Laboratories, Inc.

1405 Kansas Avenue Modesto, CA 95351 Phone (209) 572-0900 Fax (209) 572-0916

Report # V9B2510

Date: 03/11/09

City of Turlock
156 S. Broadway, Ste 270
Turlock, CA 95380

Project: San Joaquin River Study

Date Rec'd: 02/25/09

PO#

CERTIFICATE OF ANALYSIS

Sample ID: R3
Lab ID: V9B2510-01
Sample Notes:

Date Sampled: 02/25/09
Time: 10:00
Sampler: Jeanette White

Method	RL	MDL	Analyte	Result	Units	Flags	Started	Batch #
300.0	400	100	Nitrate and Nitrite as N	1190	ug/L		2/26/09	V000547
	2.0	0.4	Nitrate as NO3	5.3	mg/L			
	1000	1000	Nitrite as NO2	ND	ug/L			
351.3	1.00	0.80	Total Kjeldahl Nitrogen	ND	mg/L		3/9/09	V000637

Cedric Gregory
Chemist

Donna Keller
Laboratory Director

Certification # 2585

GeoAnalytical Laboratories, Inc.

1405 Kansas Avenue Modesto, CA 95351 Phone (209) 572-0900 Fax (209) 572-0916

Report # V9B2510 | Date: 03/11/09

City of Turlock
156 S. Broadway, Ste 270
Turlock, CA 95380

Project: San Joaquin River Study

Date Rec'd: 02/25/09

PO#

CERTIFICATE OF ANALYSIS

Sample ID: Plant Effluent
Lab ID: V9B2510-02
Sample Notes:

Date Sampled: 02/25/09
Time: 10:40
Sampler: Jeanette White

Method	RL	MDL	Analyte	Result	Units	Flags	Started	Batch #
524.2	0.50	0.08	1,1,1,2-Tetrachloroethane	ND	ug/L		2/26/09	V000568
	0.50	0.12	1,1,1-Trichloroethane	ND	ug/L			
	0.50	0.20	1,1,2,2-Tetrachloroethane	ND	ug/L			
	0.50	0.14	1,1,2-Trichloroethane	ND	ug/L			
	0.50	0.08	1,1-Dichloroethane	ND	ug/L			
	0.50	0.08	1,1-Dichloroethylene	ND	ug/L			
	0.50	0.08	1,1-Dichloropropene	ND	ug/L			
	0.50	0.10	1,2,3-Trichlorobenzene	ND	ug/L			
	0.50	0.10	1,2,4-Trichlorobenzene	ND	ug/L			
	0.50	0.11	1,2,4-Trimethylbenzene	ND	ug/L			
	0.50	0.13	1,2-Dichlorobenzene	ND	ug/L			
	0.50	0.18	1,2-Dichloroethane	ND	ug/L			
	0.50	0.12	1,2-Dichloropropane	ND	ug/L			
	0.50	0.12	1,3,5-Trimethylbenzene	ND	ug/L			
	0.50	0.13	1,3-Dichlorobenzene	ND	ug/L			
	0.50	0.11	1,3-Dichloropropane	ND	ug/L			
	0.50	0.21	1,3-Dichloropropene (total)	ND	ug/L			
	0.50	0.07	1,4-Dichlorobenzene	ND	ug/L			
	0.50	0.10	2,2-Dichloropropane	ND	ug/L			
	1.00	0.68	2-Chloroethyl Vinyl Ether	ND	ug/L			
	0.50	0.12	2-Chlorotoluene	ND	ug/L			
	0.50	0.13	4-Chlorotoluene	ND	ug/L			
	0.50	0.14	Benzene	ND	ug/L			
	0.50	0.11	Bromobenzene	ND	ug/L			
	0.50	0.12	Bromochloromethane	ND	ug/L			
	1.00	0.17	Bromodichloromethane	16.4	ug/L			
	1.00	0.21	Bromoform	0.29	ug/L	J		
	0.50	0.35	Bromomethane	ND	ug/L			
	0.50	0.20	Carbon Tetrachloride	ND	ug/L			
	0.50	0.25	Chloroethane	ND	ug/L			
	1.00	0.16	Chloroform	32.2	ug/L			
	0.50	0.31	Chloromethane	ND	ug/L			
	0.50	0.08	cis-1,2-Dichloroethylene	ND	ug/L			
	1.00	0.25	Dibromochloromethane	5.77	ug/L			
	0.50	0.21	Dibromomethane	ND	ug/L			
	0.50	0.33	Dichlorodifluoromethane (FREON 12)	ND	ug/L			
	3.00	0.20	Di-isopropyl Ether (DIPE)	ND	ug/L			
	3.00	0.17	Ethyl tert-Butyl Ether (ETBE)	ND	ug/L			
	0.50	0.12	Ethylbenzene	ND	ug/L			
	0.50	0.13	Hexachlorobutadiene	ND	ug/L			
	0.50	0.06	Isopropylbenzene (Cumene)	ND	ug/L			
	0.50	0.22	m,p-Xylene	ND	ug/L			
	3.00	0.20	Methyl tert-Butyl Ether (MTBE)	ND	ug/L			
	0.50	0.43	Methylene Chloride	ND	ug/L			
	0.50	0.09	Monochlorobenzene	ND	ug/L			
	0.50	0.13	n-Butyl Benzene	ND	ug/L			
	0.50	0.11	n-Propyl Benzene	ND	ug/L			
	0.50	0.17	o-Xylene	ND	ug/L			
	0.50	0.11	p-Isopropyltoluene	ND	ug/L			
	0.50	0.12	sec-Butylbenzene	ND	ug/L			

GeoAnalytical Laboratories, Inc.

1405 Kansas Avenue Modesto, CA 95351 Phone (209) 572-0900 Fax (209) 572-0916

Report # V9B2510

Date: 03/11/09

City of Turlock
156 S. Broadway, Ste 270
Turlock, CA 95380

Project: San Joaquin River Study

Date Rec'd: 02/25/09

PO#

CERTIFICATE OF ANALYSIS

Sample ID: Plant Effluent
Lab ID: V9B2510-02
Sample Notes:

Date Sampled: 02/25/09
Time: 10:40
Sampler: Jeanette White

Method	RL	MDL	Analyte	Result	Units	Flags	Started	Batch #
524.2	0.50	0.10	Styrene	ND	ug/L		2/26/09	V000568
	3.00	0.07	Tert-Amyl Methyl Ether(TAME)	ND	ug/L			
	2.00	0.76	tert-Butanol (TBA)	ND	ug/L			
	0.50	0.09	tert-Butylbenzene	ND	ug/L			
	0.50	0.17	Tetrachloroethylene(PCE)	ND	ug/L			
	0.50	0.05	Toluene	ND	ug/L			
	1.00	0.25	Total Trihalomethanes	54.7	ug/L			
	0.50	0.12	trans-1,2-Dichloroethylene	ND	ug/L			
	0.50	0.14	Trichloroethylene	ND	ug/L			
	5.00	0.45	Trichlorofluoromethane	ND	ug/L			
	10.0	0.19	Trichlorotrifluoroethane	ND	ug/L			
	0.50	0.33	Vinyl chloride	ND	ug/L			
	0.50	0.39	Xylenes, total	ND	ug/L			

Surrogate	Amnt Spiked	Amnt Recovered	% Recovery	QC Limit %	Surrogate Notes
1,2-Dichloroethane-d4	5.000	5.47	*109 %*	*72-132*	
2-Bromo-1-Chloropropane	5.000	4.45	*89 %*	*71-134*	
4-Bromofluorobenzene	5.000	5.13	*103 %*	*74-132*	

Mario D'Onofrio
Chemist

Donna Keller
Laboratory Director

Certification # 2585

BSK Analytical Laboratories
Engineers & Laboratories

1414 Stanislaus Street
Fresno, California 93706
(559) 497-2888
Fax (559) 485-6935

BSK Submission Number: 2009021768

Michelle Ford
City of Turlock
156 South Broadway Suite 270
Turlock, CA 95380-5123

03/10/2009

Dear Michelle Ford,

Thank you for selecting BSK Analytical Laboratories for your analytical testing needs. We have prepared this report in response to your request for analytical services. Please find enclosed the following sections for your complete laboratory report, each uniquely paginated:

CASE NARRATIVE: An overview of the work performed.
CERTIFICATE OF ANALYSIS: Analytical results.
REPORT OF SAMPLE INTEGRITY
CHAIN OF CUSTODY FORM

Certification: BSK Analytical Laboratories certifies that the test results contained in this report meet all requirements of the NELAC Standards for applicable certified drinking water chemistry analyses under CA NELAP Certificate #04227CA, CA-ELAP Certificate #1180, and Nevada Certificate #CA79. For all other matrices and bacteriological analyses, this data package is in compliance with ELAP Standards for applicable certified analyses under CA-ELAP Certificate #1180. Any exceptions to applicable standards have been noted ~~in the case narrative~~. Please note that certifications are applicable only to tests and/or analytes specified on each. Certification information may be obtained by contacting the laboratory or visiting our website at www.bsklabs.com. The results in this report pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from BSK Analytical Laboratories.

If additional clarification of any information is required, please contact your Client Services Representative, Stacey Burmer, at (800) 877-8310 or (559) 497-2888.

BSK ANALYTICAL LABORATORIES

Stacey Burmer

Stacey Burmer
Client Services Representative

Case Narrative

BSK Submission Number: 2009021768

SAMPLE AND RECEIPT INFORMATION

The sample(s) was received, prepared, and analyzed within the method specified holding times unless otherwise noted on the Certificate of Analysis. Samples, when shipped, arrived within acceptable temperature requirements of 0° to 6° Celsius unless otherwise noted on the Report of Sample Integrity. Samples collected by BSK Analytical Laboratories were collected in accordance with the BSK Sampling and Collection Standard Operating Procedures.

QUALITY CONTROL

All analytical quality controls are within established method criteria except when noted in the Quality Control section or on the Certificate of Analysis. All positive results for EPA Methods 504.1, 502.2, and 524.2 require the analysis of a Field Reagent Blank (FRB) to confirm that the results are not a contamination error from field sampling steps. If Field Reagent Blanks were not submitted with the samples, this method requirement has not been performed. QC samples may include analytes not requested in this submission.

SAMPLE RESULT INFORMATION

Samples are analyzed as received (wet weight basis) unless noted here. The results relate only to the items tested. Any exceptions to be considered when evaluating these results are also listed here, if applicable. Results contained in this package shall not be reproduced, except in full, without written approval of BSK Analytical Laboratories.

ORDER	TEST	ANALYTE	COMMENT

BSK Analytical Laboratories
Engineers & Laboratories

1414 Stanislaus Street
Fresno, California 93706
(559) 497-2888
Fax (559) 485-6935

Certificate of Analysis

NELAP Certificate #04227CA
ELAP Certificate #1180

Michelle Ford
City of Turlock
156 South Broadway Suite 270
Turlock, CA 95380-5123

BSK Submission #: 2009021768
BSK Sample ID #: 1090032

Report Issue Date: 03/10/2009

Project ID.
Project Desc: San Joaquin River Study
Submission Comments:
Sample Type: Liquid
Sample Description: R3- Parent
Sample Comments:

Date Sampled: 02/25/2009
Time Sampled: 0955
Date Received: 02/26/2009

Organics

Analyte	Method	Result	Units	PQL	Dilution	DLR	Prep Date/Time	Analysis Date/Time
Bromodichloromethane	EPA 524.2Mod	ND	ug/L	0.050	1	0.050	03/02/09	03/02/09
Bromoform	EPA 524.2Mod	ND	µg/L	0.050	1	0.050	03/02/09	03/02/09
Chloroform	EPA 524.2Mod	ND	µg/L	0.050	1	0.050	03/02/09	03/02/09
Dibromochloromethane	EPA 524.2Mod	ND	ug/L	0.050	1	0.050	03/02/09	03/02/09
Surrogate								
4-Bromofluorobenzene	EPA 524.2Mod	92	% Rec		1	N/A	03/02/09	03/02/09

mg/L: Milligrams/Liter (ppm)
mg/Kg: Milligrams/Kilogram (ppm)
µg/L: Micrograms/Liter (ppb)
µg/Kg: Micrograms/Kilogram (ppb)
%Rec: Percent Recovered (surrogates)

PQL: Practical Quantitation Limit
DLR: Detection Limit for Reporting : PQL x Dilution
ND: None Detected at DLR
pCi/L: Picocurie per Liter

H: Analyzed outside of hold time
P: Preliminary result
S: Suspect result. See Case Narrative for comments.
E: Analysis performed by External laboratory. See External Laboratory Report attachments.
MDC: Min Detectable Concentration

Report Authentication Code:

BSK Analytical Laboratories
Engineers & Laboratories

1414 Stanislaus Street
Fresno, California 93706
(559) 497-2888
Fax (559) 485-6935

Certificate of Analysis

NELAP Certificate #04227CA
ELAP Certificate #1180

Michelle Ford
City of Turlock
156 South Broadway Suite 270
Turlock, CA 95380-5123

BSK Submission #: 2009021768
BSK Sample ID #: 1090033

Report Issue Date: 03/10/2009

Project ID: Project Desc: San Joaquin River Study

Submission Comments:

Sample Type: Liquid
Sample Description: R3- Parent Duplicate
Sample Comments:

Date Sampled 02/25/2009
Time Sampled 0957
Date Received 02/26/2009

Organics

Analyte	Method	Result	Units	PQL	Dilution	DLR	Prep Date/Time	Analysis Date/Time
Bromodichloromethane	EPA 524.2Mod	ND	µg/L	0.050	1	0.050	03/02/09	03/02/09
Bromoform	EPA 524.2Mod	ND	µg/L	0.050	1	0.050	03/02/09	03/02/09
Chloroform	EPA 524.2Mod	ND	µg/L	0.050	1	0.050	03/02/09	03/02/09
Dibromochloromethane	EPA 524.2Mod	ND	µg/L	0.050	1	0.050	03/02/09	03/02/09
Surrogate								
4-Bromofluorobenzene	EPA 524.2Mod	91	% Rec		1	N/A	03/02/09	03/02/09

mg/L: Milligrams/Liter (ppm)
mg/Kg: Milligrams/Kilogram (ppm)
µg/L: Micrograms/Liter (ppb)
µg/Kg: Micrograms/Kilogram (ppb)
%Rec: Percent Recovered (surrogates)

PQL: Practical Quantitation Limit
DLR: Detection Limit for Reporting : PQL x Dilution
ND: None Detected at DLR
pCi/L: Picocurie per Liter

H: Analyzed outside of hold time
P: Preliminary result
S: Suspect result. See Case Narrative for comments.
E: Analysis performed by External laboratory. See External Laboratory Report attachments.
MDC: Min Detectable Concentration

Report Authentication Code:

BSK Analytical Laboratories
Engineers/Laboratories

1414 Stanislaus Street
Fresno, California 93706
(559) 497-2888
Fax (559) 485-6935

Certificate of Analysis

NELAP Certificate #04227CA
ELAP Certificate #1180

Michelle Ford
City of Turlock
156 South Broadway Suite 270
Turlock, CA 95380-5123

BSK Submission #: 2009021768
BSK Sample ID #: 1090034

Report Issue Date: 03/10/2009

Project ID:
Project Desc: San Joaquin River Study
Submission Comments:
Sample Type: Liquid
Sample Description: Enviormental Blank
Sample Comments:

Date Sampled: 02/25/2009
Time Sampled: 1000
Date Received: 02/26/2009

Organics

Analyte	Method	Result	Units	PQL	Dilution	DLR	Prep Date/Time	Analysis Date/Time
Bromodichloromethane	EPA 524.2Mod	ND	ug/L	0.050	1	0.050	03/02/09	03/02/09
Bromoform	EPA 524.2Mod	ND	µg/L	0.050	1	0.050	03/02/09	03/02/09
Chloroform	EPA 524.2Mod	ND	µg/L	0.050	1	0.050	03/02/09	03/02/09
Dibromochloromethane	EPA 524.2Mod	ND	µg/L	0.050	1	0.050	03/02/09	03/02/09
Surrogate								
4-Bromofluorobenzene	EPA 524.2Mod	90	% Rec		1	N/A	03/02/09	03/02/09

mg/L: Milligrams/Liter (ppm)
mg/Kg: Milligrams/Kilogram (ppm)
µg/L: Micrograms/Liter (ppb)
µg/Kg: Micrograms/Kilogram (ppb)
%Rec: Percent Recovered (surrogates)

PQL: Practical Quantitation Limit
DLR: Detection Limit for Reporting : PQL x Dilution
ND: None Detected at DLR
pCi/L: Picocurie per Liter

H: Analyzed outside of hold time
P: Preliminary result
S: Suspect result. See Case Narrative for comments.
E: Analysis performed by External laboratory. See External Laboratory Report attachments.
MDC: Min Detectable Concentration

Report Authentication Code:

Sample Integrity

Pg. 1 of 2

C 2009021768 02/26/2009
TURLOCK CI
226056
TAT: Standard

Date Received 2/26/09

Section 1- Sampled Same Day

Sample Transport: Walk In SJVC BSK-Courier Transported In: Ice Chest Box Hand

Has chilling process begun? Y N Samples Received: Chilled to Touch / Ambient / On Ice

Section 2- Sampled Previously

Sample Transport: CAO UPS SJVC Walk-In BSK-Courier GSO Fed Exp. Other:

No. Coolers/Ice Chests: 1 Temperature(s): 6

Was Temperature In Range: Y N Received On Ice: Wet Blue

Describe type of packing materials: Bubble Wrap Foam Packing Peanuts Paper Other:

Were ice chest custody seals present? Y N Intact: Y N

Section 3- COC Info.	Completed Yes	Completed No	Info From Container		Completed Yes	Completed No	Info From Container
Was COC Received	✓			Analysis Requested	✓		
Date Sampled	✓			Any hold times less than 72hr		✓	
Time Sampled	✓			Client Name	✓		
Sample ID	✓			Address	✓		
Special Storage/Handling Ins.		✓		Telephone #	✓		

Section 4- Bottles / Analysis	Yes	No	N/A	Comment
Did all bottles arrive unbroken and intact?:	✓			
Were bottle custody seals present?		✓		
Were bottle custody seals intact?		✓		
Did all bottle labels agree with COC?:	✓			
Were correct containers used for the tests requested?:	✓			
Were correct preservations used for the tests requested?:	✓			
Was a sufficient amount of sample sent for tests indicated?:	✓			
Were bubbles present in VOA Vials?: (Volatile Methods Only)		✓		
Were Ascorbic Acid Bottles received with the VOAs		✓		

Section 5- Comments / Discrepancies

Sample(s) Split/Preserve: Yes No Container: Preservation: Init.:

Was Client Service Rep. notified of discrepancies: Yes No N/A CSR: Stacy Notified By: 86

Explanations / Comments

* Please specify test requesting. 2/26/09 86

~~* For sample R3-Parent Dup. → received 1 out of 3 HCl VOA's broken.~~

For sample R3 Parent & Environ Blank → 1 out of 3 HCl VOAs filled up where to the cap was a little bubble. 2/26/09 86

(Received Again)

Report Comment Entered:

SR-FL-0002-02

Labeled by: 1334

Labels checked by: 86 1438

2009021768 02/26/2009
TURLOCK CI TAT: Standard
226056

Sample Integrity Pg 2 of 2

SR-FL-0002-02 BSK Bottles Yes No

8oz (A) 16oz (B) 32oz (C) Amber Glass (AG)

Container(s) Received	1	2	3				
Bucti $Na_2S_2O_3$							
None (p) White Cap							
None (p) Blue Cap							
HNO_3 (p) Red Cap							
H_2SO_4 (p) Yellow Cap							
NaOH (p) Green Cap							
Other:							
Dissolved Oxygen 300ml (g)							
250ml (AG) None							
250ml (AG) H_2SO_4 COD Yellow Label							
250ml (AG) $Na_2S_2O_3$ 515,547 Blue Label							
250ml (AG) $Na_2S_2O_3$+ MCAA 531.1 Orange Label							
250ml (AG) NH_4Cl 552 Purple Label							
250ml (AG) EDA DBPs Brown Label							
250ml (AG) Other:							
500ml (AG) None							
500ml (AG) H_2SO_4 TPH-Diesel Yellow Label							
1 Liter (AG) None							
1 Liter (AG) H_2SO_4 O&G Yellow Label							
1 Liter (AG) $Na_2S_2O_3$ 548 / 525 / 521 Blue Label							
1 Liter (P) $Na_2S_2O_3$+ H_2SO_4 549							
1 Liter (AG) NaOH+ZnAc Sulfide							2/2
1 Liter (AG) Ascorbic/EDTA/Pot Citrate 527 Grey Label							
1 Liter (AG) CuSO4/Trizma 529 Turquoise Label							
1 Liter (AG) Na_2SO_3 / HCL 525 UCMR Neon Green Label							
1 Liter (AG) Ammonium Chloride 535 Purple Label							
40ml VOA Vial Clear – HCL	3	2	3				
40ml VOA Vial Amber – $Na_2S_2O_3$							
40ml VOA Vial Clear – None							
40ml VOA Vial Clear - $Na_2S_2O_3$ 504, 505							
40ml VOA Vial Clear – H_3PO_4							
Other:							
Asbestos 32oz Plastic/Foil							
Radiological GA / GB (½ Gal Plastic)							
Radiological 226 / 228 (32 oz plastic N-BSK)							
Radon 200ml Clear (g)							
Low Level Hg/Metals Double Baggie							
THM-PP 4-40ml VOA None							
250 Clear Glass Jar							
500 Clear Glass Jar							
1 Liter Clear Glass Jar							
Plastic Bag							
Soil Tube Brass / Steel / Plastic							
Tedlar Bags							

BSK ANALYTICAL LABORATORIES

1414 STANISLAUS ST., FRESNO, CA 93706
(559) 497-2888 • FAX (559) 497-2893 • www.bsklabs.com

2009021768 02/26/2009
TURLOCK CI TAT: Standard
226056

* Required Fields

Temp 10

Client/Company Name *:	Report Attention* :	Phone* :	Fax* :
City of Turlock	Michelle Ford	209-668-5599x 4445	209-668-5569

Email :

Address* City* State* Zip*
156 S. Broadway Ste 270 Turlock CA 95380

Project Information: San Joaquin River Study

PO#
Quote#

Carbon Copies: (Circle One)
CDHS Fresno Co EPA
Merced Co Tulare Co
Other:

How would you like your completed results sent? ☐ E-Mail ☐ Fax ☐ EDD ☒ Mail Only

Sampler Name Printed / Signature*
Jeanette White
Jeanette R White

QC Request
STD Level II

Result Request **Surcharge
STD 5Day** 2Day** 1 Day**

REGULATORY COMPLIANCE
Electronic Data Transfer: Y N
System No.*

Matrix Types: RSW– Raw Surface Water CFW– Chlorinated Finished Water CWW= Chlorinated Waste Water BW= Bottled Water RGW = Raw Ground Water FW = Finished Water WW = Waste Water SW = Storm Water DW = Drinking Water SO = Solid

ANALYSIS REQUESTED

Sample #	# Bts	Sampled* Date	Sampled* Time	Sample Description/Location*	Matrix*	Comments / Station Code	GC/MS-STM
1	3	2-25-09	0955	R3- parent	RSW		X
2	3	2-25-09	0957	R3- parent duplicate	RSW		X
3	3	2-25-09	1000	Environmental Blank			X

Relinquished by : (Signature and Printed Name)	Company	Date	Time	Received by (Signature and Print Name)	Company
Jeanette White Jeanette R White	City of Turlock	2-25-09	1400		
Relinquished by : (Signature and Printed Name)	Company	Date	Time	Received by (Signature and Print Name)	Company
Received for lab by : (Signature and Printed Name)		Date	Time	Payment Received at Delivery: Date: Amount: Check/Cash/Card PIA# Init.	
		2-26-09	10:30		

Shipping Method: CAO UPS GSO WALK-IN SJVC FED EX OTHER
Cooling Method: WET BLUE NONE
Packing Material:

Notice: Payment for services rendered as noted herein are due in full within 30 days from when invoiced. If not so paid, account balances are deemed delinquent. Delinquent balances are subject to monthly service billings charges and interest calculation at 1 1/2% per month, 18% per annum. BSK & Associates shall be entitled to recover on delinquent accounts, cost of collections, including attorneys' fees incurred prior to or in litigation whether concluded by judgment, settlement, compromise or otherwise. The person signing for the client/company expressly acknowledges that they are either the Client or authorized agent to the Client, in the Client agrees to be responsible for payment for analytical services on this Chain of Custody. Any modification of the analysis requested, either type or quantities, will be noted and agreed upon this Chain of Custody. The turn around time for any samples received after 3:00pm will begin the next business day.

APRIL 15, 2009 UPSTREAM MONITORING LABORATORY RESULTS

GeoAnalytical Laboratories, Inc.

2300 Maryann Dr. Turlock, CA 95380 Phone (209) 669-0100 Fax (209) 668-8516
email: lab.geo@att.net

Report # V9D1508 Date: 05/05/09

City of Turlock
156 S. Broadway, Ste 270
Turlock, CA 95380

Project: San Joaquin River Study-2

Date Rec'd: 04/15/09

PO#

CERTIFICATE OF ANALYSIS

Sample ID: R3
Lab ID: V9D1508-01
Sample Notes:

Date Sampled: 04/15/09
Time: 9:35
Sampler: Jeanette White

Method	RL	MDL	Analyte	Result	Units	Flags	Started	Batch #
300.0	0.40	NA	Nitrate as N	ND	mg/L		4/16/09	V000968
	400	NA	Nitrite as N	ND	ug/L			
351.3	1.00	NA	Total Kjeldahl Nitrogen	1.57	mg/L		4/16/09	V000970

Cedric Gregory
Chemist

Donna Keller
Laboratory Director

Certification # 2585

GeoAnalytical Laboratories, Inc.

2300 Maryann Dr. Turlock, CA 95380 Phone (209) 669-0100 Fax (209) 668-8516
email: lab.geo@att.net

Report # V9D1508 **Date:** 04/18/09

City of Turlock **Project:** San Joaquin River Study-2 **Date Rec'd:** 04/15/09
156 S. Broadway, Ste 270
Turlock, CA 95380 **PO#**

Inorganic Chemistry - Quality Control
GeoAnalytical Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch V000968 - NO PREP				**Prepared & Analyzed: 04/16/09**						
Blank (V000968-BLK1)										
Nitrate as N	ND	0.40	mg/L							
Nitrite as N	ND	400	ug/L							
LCS (V000968-BS1)										
Nitrate as N	2.11	0.40	mg/L	2.258		93	85-115			
Nitrite as N	3050	400	ug/L	3049		100	85-115			
LCS Dup (V000968-BSD1)										
Nitrate as N	2.10	0.40	mg/L	2.258		93	85-115	0.5	20	
Nitrite as N	3090	400	ug/L	3049		101	85-115	1	20	
Matrix Spike (V000968-MS1)	**Source: V9D1514-03**									
Nitrate as N	8.33	0.40	mg/L	2.258	6.09	99	85-115			
Nitrite as N	2880	400	ug/L	3049	ND	95	85-115			
Matrix Spike Dup (V000968-MSD1)	**Source: V9D1514-03**									
Nitrate as N	8.32	0.40	mg/L	2.258	6.09	99	85-115	0.06	20	
Nitrite as N	2890	400	ug/L	3049	ND	95	85-115	0.1	20	
Batch V000970 - NO PREP				**Prepared & Analyzed: 04/16/09**						
Blank (V000970-BLK1)										
Total Kjeldahl Nitrogen	ND	1.00	mg/L							
LCS (V000970-BS1)										
Total Kjeldahl Nitrogen	17.4	1.00	mg/L	20.00		87	80-120			

GeoAnalytical Laboratories, Inc.

2300 Maryann Dr. Turlock, CA 95380 Phone (209) 669-0100 Fax (209) 668-8516
email: lab.geo@att.net

Report # V9D1508 | Date: 04/18/09

City of Turlock
156 S. Broadway, Ste 270
Turlock, CA 95380

Project: San Joaquin River Study-2

Date Rec'd: 04/15/09

PO#

Inorganic Chemistry - Quality Control

GeoAnalytical Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch V000970 - NO PREP				**Prepared & Analyzed: 04/16/09**						
LCS Dup (V000970-BSD1)										
Total Kjeldahl Nitrogen	19.1	1.00	mg/L	20.00		96	80-120	9	20	
Matrix Spike (V000970-MS1)		**Source: V9D1508-01**								
Total Kjeldahl Nitrogen	19.4	1.00	mg/L	20.00	1.57	89	80-120			
Matrix Spike Dup (V000970-MSD1)		**Source: V9D1508-01**								
Total Kjeldahl Nitrogen	19.3	1.00	mg/L	20.00	1.57	88	80-120	0.9	20	

GeoAnalytical Laboratories, Inc.

2300 Maryann Dr. Turlock, CA 95380 Phone (209) 669-0100 Fax (209) 668-8516
email: lab.geo@att.net

Report # V9D1508 **Date:** 04/18/09

City of Turlock **Project:** San Joaquin River Study-2 **Date Rec'd:** 04/15/09
156 S. Broadway, Ste 270
Turlock, CA 95380 **PO#**

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

GeoAnalytical Laboratories, Inc.

1405 Kansas Avenue
Modesto, CA 95351

Phone: (209) 572-0900
Fax: (209) 572-0916

Lab Report # V9D1508

Regulatory ☐ Yes ☐ No CC: ☐ Yes ☐ No

Regulator: _____

Phone: ( ) _____

Fax: ( ) _____

Original To: _____

C.C To: _____

Client: City of Turlock

Address: 156 S. Broadway St 270

City Turlock, CA Zip 95380

CHAIN OF CUSTODY

☐ EDF ☐ EDT

☐ FIELD LOGS

Project ID San Joaquin River Study - 2

Sampled By (Print Name) Jeanette White

(Signature) Jeanette R White

Date	Time	Sample type Grab	Sample type Comp	Matrix	Sample ID	Container Type	Container Size	No. Of Containers	TKN	Nitrate as N	Nitrite as N					Remarks	Lab ID #	Preservative
4-15-09	0935	X		W	R3	Pl	1L, 500 ml	2	X	X	X					Remarks	-01	
Remarks																		

Please flag results.

Relinquished by (Signature)	Date	Time	Received by (Signature)	Date	Time
Jason Brooks	4/15/09	10:44	Katie Wood	4/15/09	10:44
Relinquished by (Signature)	Date	Time	Received by (Signature)	Date	Time

Preservative: (1) 4°C (2) HCL (3) NaOH (4) $Na_2S_2O_3$ (5) HNO_3 (6) H_2SO_4 (7) Other _____

Matrix: (DW) Drinking Water (WW) Waste Water (HWW) Hazardous Waste (Water) (S) Soil/Solid

Ballers _____ 55 Gallon Drums _____

Pump Truck ☐ Time Mileage

Turnaround Time ☐ Standard ☐ Silver Rush ☐ Gold Rush ☐ Platinum Rush ☐ Other

Approved By: _____

BSK Analytical Laboratories
Engineers & Laboratories

1414 Stanislaus Street
Fresno, California 93706
(559) 497-2888
Fax (559) 485-6935

BSK Submission Number: 2009041216

Michelle Ford
City of Turlock
156 South Broadway Suite 270
Turlock, CA 95380-5123

04/28/2009

Dear Michelle Ford,

Thank you for selecting BSK Analytical Laboratories for your analytical testing needs. We have prepared this report in response to your request for analytical services. Please find enclosed the following sections for your complete laboratory report, each uniquely paginated:

CASE NARRATIVE: An overview of the work performed.
CERTIFICATE OF ANALYSIS: Analytical results.
QUALITY CONTROL (QC) SUMMARY: QC supporting the results presented herein.
REPORT OF SAMPLE INTEGRITY
CHAIN OF CUSTODY FORM

Certification: BSK Analytical Laboratories certifies that the test results contained in this report meet all requirements of the NELAC Standards for applicable certified drinking water chemistry analyses under CA NELAP Certificate #04227CA, CA-ELAP Certificate #1180, and Nevada Certificate #CA79. For all other matrices and bacteriological analyses, this data package is in compliance with ELAP Standards for applicable certified analyses under CA-ELAP Certificate #1180. Any exceptions to applicable standards have been noted in the case narrative. Please note that certifications are applicable only to tests and/or analytes specified on each. Certification information may be obtained by contacting the laboratory or visiting our website at www.bsklabs.com. The results in this report pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from BSK Analytical Laboratories.

If additional clarification of any information is required, please contact your Client Services Representative, Stacey Burmer, at (800) 877-8310 or (559) 497-2888.

BSK ANALYTICAL LABORATORIES

Case Narrative

BSK Submission Number: 2009041216

SAMPLE AND RECEIPT INFORMATION

The sample(s) was received, prepared, and analyzed within the method specified holding times unless otherwise noted on the Certificate of Analysis. Samples, when shipped, arrived within acceptable temperature requirements of 0° to 6° Celsius unless otherwise noted on the Report of Sample Integrity. Samples collected by BSK Analytical Laboratories were collected in accordance with the BSK Sampling and Collection Standard Operating Procedures.

QUALITY CONTROL

All analytical quality controls are within established method criteria except when noted in the Quality Control section or on the Certificate of Analysis. All positive results for EPA Methods 504.1, 502.2, and 524.2 require the analysis of a Field Reagent Blank (FRB) to confirm that the results are not a contamination error from field sampling steps. If Field Reagent Blanks were not submitted with the samples, this method requirement has not been performed. QC samples may include analytes not requested in this submission.

SAMPLE RESULT INFORMATION

Samples are analyzed as received (wet weight basis) unless noted here. The results relate only to the items tested. Any exceptions to be considered when evaluating these results are also listed here, if applicable. Results contained in this package shall not be reproduced, except in full, without written approval of BSK Analytical Laboratories.

ORDER	TEST	ANALYTE	COMMENT

BSK Analytical Laboratories
Engineers & Laboratories

1414 Stanislaus Street
Fresno, California 93706
(559) 497-2888
Fax (559) 485-6935

Certificate of Analysis

NELAP Certificate #04227CA
ELAP Certificate #1180

Michelle Ford
City of Turlock
156 South Broadway Suite 270
Turlock, CA 95380-5123

BSK Submission #: 2009041216
BSK Sample ID #: 1106182

Report Issue Date: 04/28/2009

Project ID:
Project Desc:
Submission Comments:
Sample Type: Liquid
Sample Description: R-3
Sample Comments:

Date Sampled: 04/15/2009
Time Sampled: 0935
Date Received: 04/16/2009

Organics

Analyte	Method	Result	Units	PQL	Dilution	DLR	Prep Date/Time	Analysis Date/Time
Bromodichloromethane	EPA 524.2Mod	ND	ug/L	0.050	1	0.050	04/22/09	04/22/09
Bromoform	EPA 524.2Mod	ND	µg/L	0.050	1	0.050	04/22/09	04/22/09
Carbontetrachloride	EPA 524.2Mod	ND	µg/L	0.050	1	0.050	04/22/09	04/22/09
Chloroform	EPA 524.2Mod	ND	µg/L	0.050	1	0.050	04/22/09	04/22/09
Dibromochloromethane	EPA 524.2Mod	ND	µg/L	0.050	1	0.050	04/22/09	04/22/09
Surrogate								
4-Bromofluorobenzene	EPA 524.2Mod	90	% Rec		1	N/A	04/22/09	04/22/09

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Engineers & Laboratories

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Certificate of Analysis

NELAP Certificate #04227CA
ELAP Certificate #1180

Michelle Ford
City of Turlock
156 South Broadway Suite 270
Turlock, CA 95380-5123

BSK Submission #: 2009041216
BSK Sample ID #: 1106183

Report Issue Date: 04/28/2009

Project ID:
Project Desc:
Submission Comments:
Sample Type: Liquid
Sample Description: Blank
Sample Comments:

Date Sampled: 04/15/2009
Time Sampled: 0940
Date Received: 04/16/2009

Organics

Analyte	Method	Result	Units	PQL	Dilution	DLR	Prep Date/Time	Analysis Date/Time
Bromodichloromethane	EPA 524.2Mod	ND	ug/L	0.050	1	0.050	04/22/09	04/22/09
Bromoform	EPA 524.2Mod	ND	µg/L	0.050	1	0.050	04/22/09	04/22/09
Carbontetrachloride	EPA 524.2Mod	ND	µg/L	0.050	1	0.050	04/22/09	04/22/09
Chloroform	EPA 524.2Mod	ND	µg/L	0.050	1	0.050	04/22/09	04/22/09
Dibromochloromethane	EPA 524.2Mod	ND	µg/L	0.050	1	0.050	04/22/09	04/22/09
Surrogate								
4-Bromofluorobenzene	EPA 524.2Mod	91	% Rec		1	N/A	04/22/09	04/22/09

2009041216 04/16/2009
TURLOCK CI TAT: Standard
416061

Sample Integrity Pg 2 of 2

SR-FL-0002-02

BSK Bottles (Yes) No

8oz (A) 16oz (B) 32oz (C) Amber Glass (AG)

Container(s) Received	1	2					
Bacti $Na_2S_2O_3$							
None (p) White Cap							
None (p) Blue Cap							
HNO_3 (p) Red Cap							
H_2SO_4 (p) Yellow Cap							
NaOH (p) Green Cap							
Other:							
Dissolved Oxygen 300ml (g)							
250ml (AG) None							
250ml (AG) H_2SO_4 COD Yellow Label							
250ml (AG) $Na_2S_2O_3$ 515,547 Blue Label							
250ml (AG) $Na_2S_2O_3$+ MCAA 531.1 Orange Label							
250ml (AG) NH_4Cl 552 Purple Label							
250ml (AG) EDA DBPs Brown Label							
250ml (AG) Other:							
500ml (AG) None							
500ml (AG) H_2SO_4 TPH-Diesel Yellow Label							
1 Liter (AG) None							
1 Liter (AG) H_2SO_4 O&G Yellow Label							
1 Liter (AG) $Na_2S_2O_3$ 548 / 525 / 521 Blue Label							
1 Liter (P) $Na_2S_2O_3$+ H_2SO_4 549							
1 Liter (AG) NaOH+ZnAc Sulfide							
1 Liter (AG) Ascorbic/EDTA/Pot Citrate 527 Grey Label							
1 Liter (AG) CuSO4/Trizma 529 Turquoise Label							
1 Liter (AG) Na_2SO_3 / HCL 525 UCMR Neon Green Label							
1 Liter (AG) Ammonium Chloride 535 Purple Label							
40ml VOA Vial Clear – HCL	6	3					
40ml VOA Vial Amber – $Na_2S_2O_3$							
40ml VOA Vial Clear – None							
40ml VOA Vial Clear – $Na_2S_2O_3$ 504, 505							
40ml VOA Vial Clear – H_3PO_4							
Other:							
Asbestos 32oz Plastic/Foil							
Radiological GA / GB (½ Gal Plastic)							
Radiological 226 / 228 (32 oz plastic N-BSK)							
Radon 200ml Clear (g)							
Low Level Hg/Metals Double Baggie							
THM-FP 4-40ml VOA None							
250 Clear Glass Jar							
500 Clear Glass Jar							
1 Liter Clear Glass Jar							
Plastic Bag							
Soil Tube Brass / Steel / Plastic							
Tedlar Bags							

4/16/09

2009041216 04/16/2009
TURLOCK CI TAT: Standard
416061

"2"

LARRY WALKER ASSOCIATES 707 FOURTH STREET, DAVIS, CA 95616 TEL

CHAIN-OF-CUSTODY RECORD

DATE: Lab ID:

DESTINATION LAB: BSK Labs

ADDRESS: 1414 Stanislaus
Fresno, CA 93706

PHONE: 800.877.8310
FAX:

SAMPLED BY: Jeanette White

LWA TASK MANAGER: Brian Laurenson

LWA PROJECT MANAGER: Brian Laurenson

LARRY WALKER [redacted] ASSOCIATES

REQUESTED ANALYSIS: Dichlorobromomethane, Chlorodibromomethane & Carbon Tetrachloride by low- level SIM

	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container #	Container Type	Container Pres.	Dichlorobromomethane, Chlorodibromomethane & Carbon Tetrachloride by low- level SIM				NOTES
1	R-3	4/15/2009	0935	W	2	3 VOA	HCl	X	110	0182		Extra volume provided
2	Blank	4/15/2009	0940	W	1	3 VOA	HCl	X	0183			
3												
4												
5												
6												
7												
8												
9												

SENDER COMMENTS:
Report all constituents to MDL of 0.05 µg/L using SIM

LABORATORY COMMENTS:

RELIQUINSHED BY

Signature: Jeanette R White
Print: Jeanette R. White
Company: City of Turlock
Date: 4-15-09 Time: 1030

RECEIVED BY [2]

Signature:
Print:
Company: BSK
Date: 4/16/09 Time: 1129

Sample Integrity

Pg. 1 of 2

C

2009041216 04/16/2009
TURLOCK CI TAT: Standard
416061

Date Received 4/16/09

Section 1- Sampled Same Day

Sample Transport: Walk In SJVC BSK-Courier Transported In: Ice Chest Box Hand

Has chilling process begun? Y N Samples Received: Chilled to Touch / Ambient / On Ice

Section 2- Sampled Previously

Sample Transport: CAO UPS SJVC Walk-In BSK-Courier GSO Fed Exp. Other:_____

No. Coolers/Ice Chests: 1 Temperature(s): 2

Was Temperature In Range: Y N Received On Ice: Wet Blue

Describe type of packing materials: Bubble Wrap Foam Packing Peanuts Paper Other:_____

Were ice chest custody seals present? Y N Intact: Y N

Section 3- COC Info.	Completed Yes	Completed No	Info From Container		Completed Yes	Completed No	Info From Container
Was COC Received	✓			Analysis Requested	✓		
Date Sampled	✓			Any hold times less than 72hr		✓	
Time Sampled	✓			Client Name	✓		
Sample ID				Address	✓		
Special Storage/Handling Ins.	✓	✓		Telephone #	✓		

Section 4- Bottles / Analysis	Yes	No	N/A	Comment
Did all bottles arrive unbroken and intact?:	✓			
Were bottle custody seals present?			✓	
Were bottle custody seals intact?			✓	
Did all bottle labels agree with COC?:	✓			
Were correct containers used for the tests requested?:	✓			
Were correct preservations used for the tests requested?:	✓			
Was a sufficient amount of sample sent for tests indicated?:	✓			
Were bubbles present in VOA Vials?: **(Volatile Methods Only)**		✓		
Were Ascorbic Acid Bottles received with the VOAs		✓		

Section 5- Comments / Discrepancies

Sample(s) Split/Preserve: Yes No Container: _____ Preservation:_____ Init.:____

Was Client Service Rep. notified of discrepancies: Yes No N/A CSR: Notified By:

Explanations / Comments

Report Comment Entered:

SR-FL-0002-02

Labeled by: 86 1350

Labels checked by: N 15-55