URS

DOCKET	
09-AFC-8	
DATE	JAN 05 2010
RECD.	JAN 06 2010

January 6, 2010

Dockets Unit
California Energy Commission
1516 Ninth Street, MS 4
Sacramento, CA 95814-5512

Re: Watson Cogeneration Steam and Electric Reliability Project
Application for Certification 09-AFC-1

On behalf of Watson Cogeneration Company, the applicant for the above-referenced Watson Cogeneration Steam and Electric Reliability Project, we are pleased to submit the following:

- Responses to CEC Data Request Set 1 (32) and Set 2 (40 – 48).

We have included 10 hard copies and 2 CDs.

Please note that the submittal was also distributed by electronic mail to the recipients identified on the Proof of Service List as preferring electronic mail delivery. One hardcopy of the submittal was shipped today via Federal Express from Denver, Colorado to each of the other recipients identified on the Proof of Service List.

Sincerely,
URS Corporation

Cindy Kyle-Fischer
Project Manager

Enclosures

cc: Ross Metersky, BP Products North America, Inc.

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RESPONSES TO CEC DATA REQUEST SET 1 (#32) AND SET 2 (#40-48) APPLICATION FOR CERTIFICATION (09-AFC-1)

for Watson Cogeneration Steam and Electric Reliability Project

Submitted to:
California Energy Commission
1516 9th Street , MS 15
Sacramento, CA 95814-5504

Submitted by:
Watson Cogeneration Company
22850 South Wilmington Avenue
Carson, CA 90745

With support from:
URS Corporation
8181 East Tufts Avenue
Denver, CO 80237

January 2010

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Response to Data Request Set 1 (32) and Set 2 (40 – 48)

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List of Acronyms and Abbreviations Used in Responses

AFC	Application for Certification
afy	acre-feet per year
Applicant	Watson Cogeneration Company
bbls	barrels
BMP	Best Management Practice
CEC	California Energy Commission
CPM	Compliance Project Manager
CWS	Clean Water Sewer
DESCP	Drainage Erosion and Sediment Control Plan
Facility	Watson Cogeneration Facility
gpd	gallons per day
gpm	gallons per minute
HRSG	heat recovery steam generator
LACSD	Los Angeles County Sanitation Districts
LADPW	Los Angeles County Department of Public Works
mgd	million gallons per day
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
OWS	Oily Water Sewer
Project	Watson Cogeneration Steam and Electric Reliability Project
RO	Reverse Osmosis
RWQCB	Regional Water Quality Control Board
STG	Steam Turbine Generator
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
WBMWD	West Basin Municipal Water District

SOILS AND WATER RESOURCES

Technical Area: Soils and Water Resources

Author: Mark Lindley, P.E.

BACKGROUND: STORMWATER

The BP Watson project site is located within an existing berm to prevent run-on from adjacent areas and runoff from the project site. Runoff will be collected in an existing sump and discharged to the BP Carson refinery oily water treatment system. Prior to construction, a construction phase Stormwater Pollution Prevention Plan (SWPPP) will be required. Best Management Practices will be employed to minimize impacts to stormwater during construction. The Energy Commission also requires preparation and implementation of a detailed Drainage, Erosion, and Sediment Control Plan to protect soil and water resources during construction and operation of the proposed project.

DATA REQUEST

32. Please provide a draft Drainage Erosion and Sediment Control Plan (DESCP) containing elements A through I below outlining site management activities and erosion/sediment control BMPs to be implemented during site mobilization, excavation/demolition, construction, and post-construction activities. The level of detail in the draft DESCP should be commensurate with the current level of planning for site grading and drainage. Please provide all conceptual erosion control information for those phases of construction and post-construction that have been developed or provide a statement when such information will be available. The DESCP may be combined with the SWPPP required by the Regional Water Quality Control Board to limit the need for the project to develop separate stormwater management plans.

a) Vicinity Map – A map(s) at a minimum scale 1"=100' will be provided indicating the location of all project elements (construction site, laydown area, pipelines, etc.) with depictions of all significant geographic features including swales, storm drains, and sensitive areas.

b) Site Delineation – All areas subject to soil disturbance for BP Watson (project site, laydown area, all linear facilities, landscaping areas, and any other project elements) shall be delineated showing boundary lines of all construction/demolition areas and the location of all existing and proposed structures, pipelines, roads, and drainage facilities.

c) Watercourses and Critical Areas – The DESCP shall show the location of all nearby watercourses including swales, storm drains, and drainage ditches. Indicate the proximity of those features to the BP Watson construction, laydown, and landscape areas and all transmission and pipeline construction corridors.

d) Drainage Map – The DESCP shall provide a topographic site map(s) at a minimum scale 1"=100' showing all existing, interim and proposed drainage systems and drainage area boundaries. On the map, spot elevations are required where relatively flat conditions exist. The spot elevations and contours shall be extended off-site for a minimum distance of 100 feet in flat terrain.

e) Narrative of Project Site Drainage – The DESCP shall include a narrative of the drainage measures to be taken to protect the site and downstream facilities. The narrative should include the summary pages from the hydraulic analysis prepared by a professional engineer/erosion control specialist. The narrative shall state the watershed size(s) in acres that was used in the calculation of drainage measures. The hydraulic analysis should be used to support the selection of BMPs and structural controls to divert off-site and on-site drainage around or through the BP Watson construction and laydown areas.

f) Clearing and Grading Plans – The DESCP shall provide a delineation of all areas to be cleared of vegetation and areas to be preserved. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross sections or other means. The locations of any disposal areas, fills, or other special features will also be shown. Illustrate existing and proposed topography tying in proposed contours with existing topography.

g) Clearing and Grading Narrative – The DESCP shall include a table with the quantities of material excavated or filled for the site and all project elements of the CPVVS project (project site, lay down area, transmission corridors, and pipeline corridors) whether such excavations or fill is temporary or permanent, and the amount of such material to be imported or exported.

h) Best Management Practices Plan – The DESCP shall identify on the topographic site map(s) the location of the site specific BMPs to be employed during each phase of construction (initial grading/demolition, project element excavation and construction, and final grading/stabilization). BMPs shall include measures designed to prevent wind and water erosion.

i) Best Management Practices Narrative – The DESCP shall show the location (as identified in H above), timing, and maintenance schedule of all erosion and sediment control BMPs to be used prior to initial grading, during all project element (site, pipelines, etc.) excavations and construction, final grading/stabilization, and post-construction. Separate BMP implementation schedules shall be provided for each project element for each phase of construction. The maintenance schedule should include post-construction maintenance of structural control BMPs, or a statement provided when such information will be available.

RESPONSE

A draft Drainage Erosion and Sediment Control Plan (DESCP) is presented in Appendix A-1.

BACKGROUND

At the Data Response and Issue Resolution Workshop on October 14, 2009, a member of the public expressed concern about past water discharge violations that may have occurred at the Watson Cogeneration Facility (Facility). Staff was not aware of any historic or pending water related violations and would like more information to determine if there have been violations associated with any of the water treatment and discharge systems shared between the BP Watson refinery and the proposed fifth train.

DATA REQUEST

40. A. Please provide all notices of stormwater or wastewater discharge violations for the discharge streams that the proposed fifth train would contribute to including the refinery's oily/water treatment system and clean water system.

B. If there have been discharge violations associated with the oily/water treatment system or clean water system, please provide a detailed discussion of the nature of the violations and what changes to the treatment systems were required to prevent continued or additional violations in the future.

RESPONSE

Table 40-1, Summary of Notices of Violation for Discharges, presents all notices of discharge violations that the proposed fifth train would contribute to for the past 5 years. It is not possible to determine if any of the notices of violation were caused by the area of the proposed fifth train. None of these violations required changes to the treatment systems to prevent continued or additional future violations.

DATA REQUEST

41. If violations related to the oily/water treatment system or clean water system are currently pending, please describe the current discharge violations and the proposed changes to the treatment systems required to address the violations.

RESPONSE

There are no violations currently pending, although a valve box is scheduled for installation in 2010 for the Northeast property laydown area (also known as the Johns Manville area), as indicated in Table 40-1, Summary of Notices of Violation for Discharges. This area is not associated with the Construction Laydown and Parking Area for this Project.

Table 40-1
Summary of Notices of Violation for Discharges

Date NOV Received	Agency	Area / Description	Regulation / Permit	Physical Changes to the Oily Water Sewer (OWS) or Clean Water Sewer (CWS) Systems
9/1/09	Regional Water Quality Control Board (RWQCB)	Northeast Property/Johns Manville Area – A Notice of Violation (NOV) was issued for inadequate SWPP Plan, including inadequate field management of laydown areas in the NE Property/JM area.	State General Industrial Storm Water Permit	No changes to the sewer system - There is no OWS or CWS system immediately in this area of the laydown yards. A storm water outfall exists in this area (Outfall 13), which is the subject of a project to install a valve box in 2010.
9/26/08	State Water Resources Control Board (SWRCB)	NPDES permit limit exceedances from 2003-2008 - Some of the listed exceedances were contested due to discrepancies between the letter and the submitted reports.	NPDES Permit	No changes to the CWS system - Item is administrative.
9/21/07	Los Angeles County Department of Public Works (LADPW)	Outfall 23 Storm Water Observation Box - Change of Ownership Required to change name from ARCO Polypropylene to BP West Coast Products LLC.	Industrial Waste Permit No. 460616	No changes to the CWS system - Item is administrative.
4/26/07	Los Angeles County Sanitation Districts (LACSD)	Failure to maintain equipment connected to Tank 95 - During impounding conditions, the guillotine valve was discovered to have a leak and the LEL pot drain was clogged.	Industrial Waste Permit No. 15631	No changes to the OWS system - The refinery unclogged the LEL pot drain and hydroblasted the Tank 95 discharge piping to remove scale buildup. In addition, the BP Refinery modified its internal water impounding procedure to close both the guillotine valve and Tank 95 30-inch valve during impound situations.
12/28/05	SWRCB	NPDES Reporting - Deficient reporting on Discharge Monitoring Report for missing fluoranthene data.	NPDES Permit	No changes to the CWS system - Item is administrative.
2/2/05	RWQCB	NPDES Reporting - Late submittal of 2003 annual report.	NPDES Permit	No changes to the CWS system - Item is administrative.
5/18/04	RWQCB	NPDES Reporting - Late or non-submittal of reports for 1Q2004 and 2Q2004.	NPDES Permit	No changes to the CWS system - Item is administrative.

BACKGROUND

Watson proposes to utilize tertiary-treated recycled water for evaporative cooling and all makeup water associated with the fifth train. The recycled water will be supplied by the West Basin Water Treatment Plant, via an existing piping connection. Data Responses #16-23 indicate that by July 2013, the proposed five train cogeneration facility's total consumption of 8,623 acre-feet per year (afy) of total water supply will be comprised of 5,806 afy of reclaimed water from the West Basin Water Treatment Plant. However, the Data Responses did not specify the source(s) and proportions of the remaining 2,817 afy of water supply, i.e., what percentage of water would be supplied from the California Water Services Company and what percentage of water is groundwater provided by on-site wells. Staff needs this information to analyze potential impacts to the identified water supply.

The AFC indicates that the Silverado water-bearing zone in the vicinity of the site is subject to sea water intrusion and that two sea water barrier projects are in operation to inhibit the inland flow of salt water into the West Coast Subbasin. Staff is therefore interested in the volume of water supplied annually from California Water Services Company and from groundwater and whether this would affect the sea water intrusion barrier.

DATA REQUEST

42. Please identify what portion of the 2,817 afy of water supply will be provided by municipal supply from the California Water Services Company and groundwater from onsite wells.

RESPONSE

All of the 2,817 acre-feet per year (afy) is intended to be provided by the municipal supply from the California Water Services Company. Groundwater from on-site wells will only be used as a backup supply.

DATA REQUEST

43. Please provide a detailed discussion regarding the availability and feasibility of replacing the existing fresh water supplies with additional recycled or other alternative water supply.

RESPONSE

As previously described in the responses to Data Requests 20 and 23, the BP Refinery and West Basin Municipal Water District (WBMWD) are evaluating supply options and WBMWD is preparing a Feasibility Study for the expansion of its recycled water facilities. The conversion to reclaimed supplies related to the fifth train and the existing Watson Cogeneration Facility is expected to occur in two phases. Completion of the first phase, supplying nitrified water to the

cooling tower cells, is expected by December 2012. The nitrified water would cover the requirements of the existing cooling tower cells as well as the two new cooling tower cells required by the Project. Completion of the second phase, supplying reverse osmosis (RO) water to the boilers, is expected between December 2012 and July 2013. If it becomes necessary to stagger the implementation of the RO water supply, the RO water will first be supplied to cover the boiler feedwater requirements of the fifth train, and, if available then the requirements of the existing units. Until that time, the boiler feed water necessary to operate existing Units No. 1 through No. 4 will continue to be supplied by the BP Refinery and sourced from the California Water Services Company and on-site groundwater wells.

As previously indicated in the response to Data Request 16, the addition of the fifth train will not increase the fresh water requirements of the Watson Cogeneration Facility.

DATA REQUEST

44. A. If the project plans to continue to rely on groundwater for a portion of the project's annual water supply, please provide a detailed discussion regarding impacts associated with the use of groundwater.

B. Please discuss how the proposed groundwater pumping would contribute to the sea water intrusion impacts and how curtailing groundwater pumping could affect the sea water intrusion impacts.

RESPONSE

The Project will be a new facility. The goal of the Project is to utilize 100 percent reclaimed water for its annual water supply. As a new facility it will not "continue" to rely on groundwater. As described in AFC Section 5.5.3.1, Project Water Resources Plan, the municipal supply provided by the California Water Service Company will be used as a backup supply in the event of a disruption of the reclaimed water supplies. On-site wells may be used to augment this backup supply for water quality purposes.

DATA REQUEST

45. A. Please identify the proportions of water (local groundwater, surface water from State Water Project and the Colorado River) that comprise the municipal water supply delivered to BP Watson from the California Water Services Company.

B. Please compare the potential impacts associated with the water supplied by the California Water Services Company to groundwater pumped onsite.

RESPONSE

A. The California Water Services Company has indicated that the water supplied to the Carson, California service area consists of approximately 20 to 30 percent groundwater

and 80 to 70 percent purchased surface water. However, as described in the responses to Data Requests 42 and 44, the goal of the Project is to utilize 100 percent reclaimed water supplied by the West Basin Water Treatment Plant as the primary supply for evaporative cooling and all makeup water.

B. As discussed in the response to Data Request 44, the Project does not plan to use on-site groundwater, so no comparison can be drawn.

BACKGROUND

Data Requests/Responses #26-31 were intended to provide Staff with additional information on the stormwater and wastewater streams BP and the storage and treatment processes included in the BP Refinery's oily-water treatment system. Staff requested additional information to confirm that the existing oily-water treatment system had adequate capacity to store and treat the additional wastewater and stormwater that BP Watson proposes to direct to the BP Refinery's oily-water treatment system.

Data Response 26 indicates that there was a description of the treatment processes in the oily-water treatment system included in the Industrial Wastewater Discharge Permit provided in Appendix R of the AFC. While the cover letter on the permit indicates that plans of the treatment system are attached, those plans were not included in Appendix R.

Data Response 28 provides stormwater calculations for the existing and proposed conditions at the BP Watson Cogeneration site. However, the calculations do not differentiate between stormwater directed to the existing clean water system which is ultimately discharged to the Dominguez Channel and stormwater directed to the oily water system which is ultimately discharged to the Los Angeles County Sanitation District's wastewater treatment plant. For instance, Areas 1 and 8 which comprise the fifth train area are currently directed to the clean water system and are proposed to be directed to the oily-water system following completion of the fifth train. Based on the stormwater calculations provided, these two areas alone produce a peak flow rate of 5,271 gallons per minute (gpm) during a 100-year event which exceeds the 5,210 gpm wet weather flow limit included in the BP Refinery's Industrial Wastewater Discharge Permit. Staff would like a clear determination of the changes in flowrates and volumes directed to each system.

Data Response 29 indicates that the BP Refinery oily water treatment system currently processes an average of 4,000 gpm or about 5,760,000 gallons per day (gpd) of wastewater which is in excess of the 5,081,000 (gpd) permit flowrate included in the Industrial Wastewater Discharge Permit.

Staff needs additional information on the storage capacity and treatment processes in the BP Refinery's oily-water treatment system to confirm that the existing treatment system has adequate excess storage capacity to treat the additional stormwater and wastewater discharge associated with the proposed fifth train. While the reported peak discharge of approximately 8,000 gpm is below the permitted maximum of 10,000 gpm, it is not clear that the existing system has adequate storage capacity to contain the additional stormwater runoff discharged

from the proposed fifth train from a 100-year event without exceeding the 5,210 gpm wet weather flow limit.

DATA REQUEST

46. Please provide revised stormwater calculations for existing and proposed conditions at the BP Watson Cogeneration site that differentiate between stormwater directed to the BP Refinery's oily-water treatment system and clean water system. The calculations should clearly identify changes in watershed areas and parameters and the resulting flowrates and volumes discharged to each system during 10-year and 100-year events.

RESPONSE

The revised calculations are provided in Appendix A-2, Revised Storm Water Runoff Calculations.

DATA REQUEST

47. Please provide a description of the treatment processes and storage capacity for the BP Watson Refinery's oily-water treatment system. Please provide the estimated discharge volume to the oily-water treatment system during a 100-year storm event under existing conditions (including the BP Refinery and BP Watson Cogeneration site) and the increase in discharge volume with the proposed fifth train at the BP Watson Cogeneration site. Please demonstrate that the existing treatment system has adequate storage volume to contain the runoff from a 100-year event without exceeding the wet weather flow limit.

RESPONSE

The Applicant objects to this question insofar as it seeks information regarding the operation of the existing BP Refinery rather than the proposed cogeneration facility. Information regarding the BP Refinery is beyond the scope of this proceeding, not relevant, and unduly burdensome. Without waiving this objection, Watson will voluntarily provide certain information in response to this request.

Figure 47-1, Water Storage Processing System Simplified Flow Diagram, contains an updated version of the treatment system referenced in the Industrial Wastewater Discharge Permit provided in Appendix R, Industrial Wastewater Discharge Permit, of the Application for Certification (AFC) and inadvertently omitted from Data Response 26. Wastewater tanks 19, 20, and 21 have storage capacities of 120,000 barrels (bbls) (5.04 million gallons), 120,000 bbls (5.04 million gallons), and 300,000 bbls (12.6 million gallons), respectively. These tanks are used to control the BP Refinery's discharge rate. If the wastewater tanks are not sufficient to manage discharges during a major storm event, the BP Refinery also utilizes two basins and a reservoir with a combined capacity of 2,200,000 bbls (92.4 million gallons). West Basin and

East Basin can each hold 600,000 bbls (25.2 million gallons) and Reservoir 505 can hold 1,000,000 bbls (42 million gallons). The basins and reservoir are currently empty.

While the Industrial Wastewater Discharge Permit includes 5,081,000 gallons per day (gpd) (3,528 gallons per minute [gpm]) in (i) the Requirement List as an average permitted flowrate and (ii) the Fact Sheet as a permitted flowrate, the permit's enforceable limits are 5,210 gpm between 10 a.m. and 2 a.m. and 10,000 gpm between 2 a.m. and 10 a.m. These limits apply during wet weather conditions.

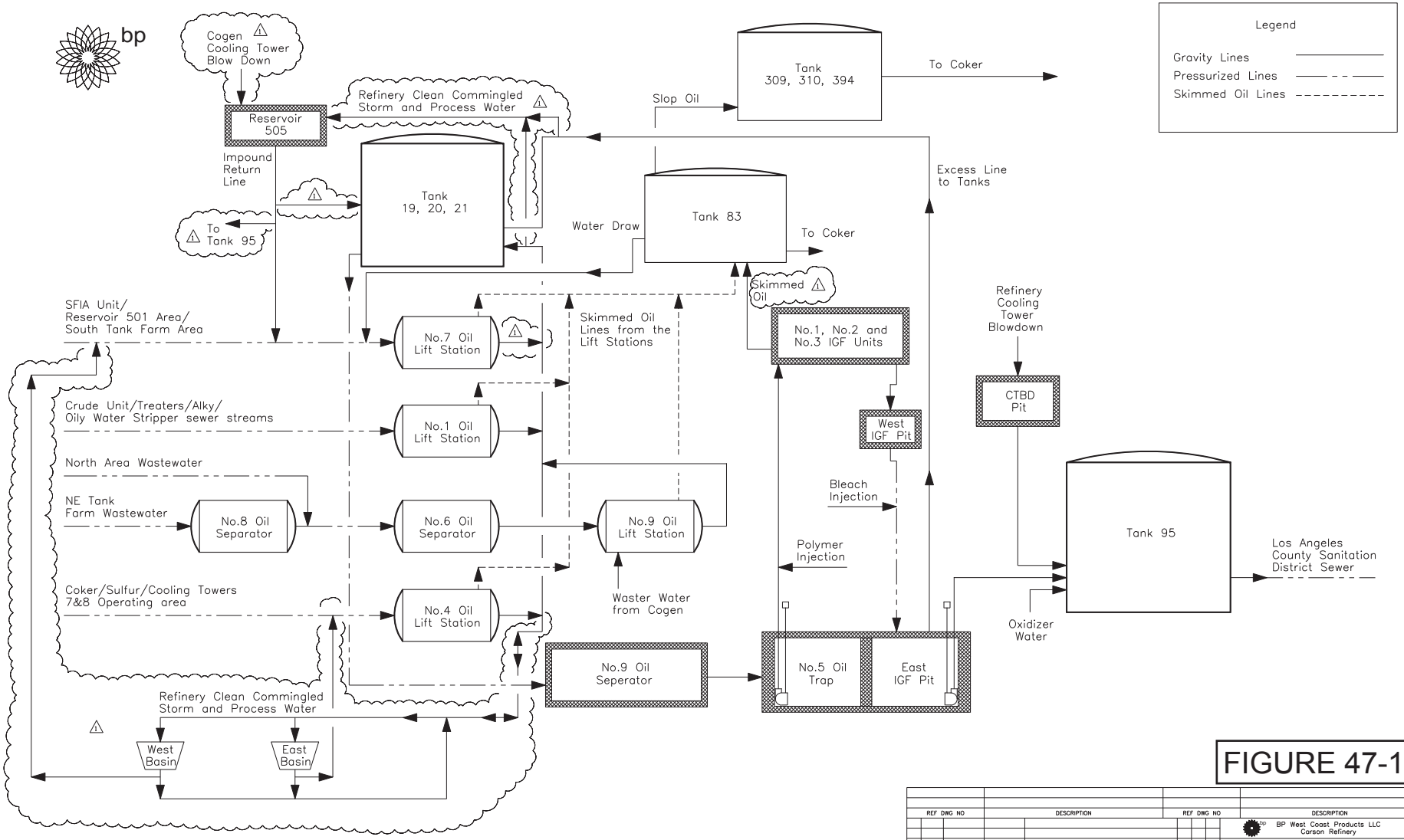


FIGURE 47-1

REV	DATE	AUTH	PROJ ENGR	REVISION	BY	CKD	APR
1	3/05	W559	S. GOGOSHA	UPDATED W/ ADDITIONAL DETAILS OF 505 E/W BASINS	AHT	RAM	
0	1/05	W559	S. GOGOSHA	DWG CADDED – WATER STORAGE PROCESSING SYSTEM	AHT	RAM	

REF DWG NO | DESCRIPTION | REF DWG NO | DESCRIPTION

BP West Coast Products LLC
Carson Refinery

WATER STORAGE
PROCESSING SYSTEM
SIMPLIFIED FLOW DIAGRAM

GRID: TYPE: 5 SUBTYPE: 5B

DWG NO. 8700-10137138-1 REVISION 1

10137138

INDEX REV

BACKGROUND

In addition to these eight Data Requests, staff would like to discuss a potential condition of certification. This condition is suggested to document that the project is efficiently using the water supplied to the Facility. As described in the AFC, the project proposes an additional use of 3,016 afy for the proposed fifth train. This increase in water usage is more than 50% of the historic water use of the existing four-trains currently being operated. Staff would like to implement a monitoring plan to ensure that the project is efficiently utilizing the water supplied to the Facility. Therefore, at the next Data Response workshop, staff would like to discuss this potential condition. Additionally, staff is prepared to discuss any alternative suggestions from the applicant.

DATA REQUEST

48. Please identify any operational limitations that, as a factual and operational matter, would prevent the applicant from complying with the following proposed condition of certification.

SOIL & WATER-1: During operations, the Watson Cogeneration Steam and Electric Reliability Project (BP Watson) shall not exceed 8,623 acre-feet per year (afy) of total water supply. Beginning in 2014, reclaimed water shall comprise at least 5,806 afy of the total operational water supply and municipal water supplied by the California Water Services Company shall not exceed 2,817 afy. The use of groundwater supplied by onsite wells shall only be utilized as a back-up supply in the event of an interruption in the reclaimed water supply and/or the municipal water supply (this depends on Staff's analysis of potential impacts). Groundwater use shall not exceed 862 afy.

Prior to the use of water during commercial operation by the Watson Cogeneration Facility (Facility), the project owner shall install and maintain metering devices as part of the water supply and distribution system to monitor and record in gallons per day the total volumes of water supplied to the Facility from each water source. Those metering devices shall be operational for the life of the project.

During operations, the Facility shall deliver at least 70% of total water supply as steam to the BP Watson Refinery 600# Steam Header, and at least 12% of total water supply to the BP Watson Refinery High Pressure Water Supply. Release of steam from the Steam Cycle Blowdown shall be less than 1% of total water supply and discharge to the BP Watson Refinery Wastewater System shall be less than 5% of total water supply. To help monitor the efficiency of water use at the Facility, the project owner shall install and maintain metering devices to monitor:

- Steam delivery to the Refinery Steam Header (line M, AFC Figure 5.5-1),
- Water delivery to the Refinery High Pressure Water System (line L, AFC Figure 5.5-1),

- Flash steam released from the Steam Cycle Blowdown Tank (line K, AFC Figure 5.5-1), and
- Wastewater Discharge (lines Q and P, AFC Figure 5.5-1).

The project owner shall prepare an annual Water Use Summary, which will include the daily usage, monthly range and monthly average of daily usage in gallons per day, and total usage by the project on a monthly and annual basis in acre-feet for each water supply (reclaimed, municipal, and groundwater) for the five-train Facility. In addition, the project owner shall prepare an annual Water Delivery Summary which will include daily delivery, monthly range and monthly average of daily delivery in gallons per day, and total delivery by the project on a monthly and annual basis in acre-feet for the delivery of steam, water, and wastewater to the BP Watson Refinery and release of flash steam from the Steam Cycle from the five-train Facility. Potable water use on-site shall be recorded on a monthly basis. The Water Delivery Summary should identify the percentage of total water supplied that was delivered as steam, water, and wastewater to the BP Watson Refinery and released as flash steam from the Steam Cycle. For subsequent years, the annual Water Use Summary shall also include the yearly range and yearly average water use by the project. The annual Water Use Summary and Water Delivery Summary shall be submitted to the Compliance Project Manager (CPM) as part of the annual compliance report.

Verification: At least 60 days prior to commercial operation of the Facility, the project owner shall submit to the CPM conclusive proof that metering devices have been installed and are operational on the water supply and distribution system. The project owner will document total reclaimed, municipal, and groundwater usage and report all water usage to the CPM. The project owner will report all disruptions to the reclaimed, municipal, and groundwater supply, the water treatment process, the volume of backup water used, and the total annual reclaimed, municipal, and groundwater use for the year, and the two years prior, in the annual compliance report. The project owner shall also document total steam, water, and wastewater delivery to the BP Watson Refinery and document the total steam, water, and wastewater delivery for the year and two years prior in the annual compliance report. The project owner shall also provide a report on the servicing, testing and calibration of the metering devices in the annual compliance report.

RESPONSE

Applicant Clarification of Water Usage

AFC Table 5.5-9, Watson Water Consumption/Wastewater Production, did not reflect water conserved due to the return of steam condensate from the refinery and Watson's Steam Turbine Generators (STGs). On average, Watson receives 45 percent of water supplied as steam to its Heat Recovery Steam Generators (HRSGs) as returned condensate from its STGs and the BP Refinery. All returned condensate is condensed steam. The condensate is delivered to Watson's process downstream of Watson's water treatment system and displaces the use of untreated water

by Watson. Condensate return related to the Project will reduce Watson's water consumption by 1.12 mgd or 1,252 afy. The numbers presented in AFC Table 5.5-4, Water Balance Flow Values, are not affected by this clarification. A revised Table 5.5-9, Watson Water Consumption/Wastewater Production, is presented below.

Revised Table 5.5-9
Watson Water Consumption/Wastewater Production

	Average Daily mgd		Maximum Daily mgd		Average Annual acre/feet		Percent Increase from Fifth Train
Source	**Existing Watson Facilities**	**With Fifth Train**	**Existing Watson Facilities**	**With Fifth Train**	**Existing Watson Facilities**	**With Fifth Train**	
West Basin Municipal Water District							
First Pass RO Water	4.00	5.43	4.90	6.36	4,478	6,081	
Nitrified Water	1.01	1.15	1.73	2.07	1,130	1,290	
Total Water Use	5.00	6.58	6.62	8.43	5,607	7,371	31%
Wastewater to Sewer	0.81	0.94	1.21	1.41	904	1,054	17%

Source: Kiewit Power Engineers Co., 2008 and Watson Cogeneration Team, 2009.
Notes:
mgd = million gallons per day
RO = reverse osmosis

Proposed Limits of Watson Cogeneration Water Supply

The Applicant objects to this proposed condition of certification insofar as it proposes limitations regarding the operation of the existing permitted Watson Cogeneration Facility, rather than the Project. Limitations regarding the existing permitted Facility are beyond the scope of this proceeding, not relevant, and unduly burdensome. Without waiving this objection, Watson will voluntarily provide certain information in response to this request.

As previously described in the responses to Data Requests 20 and 23 (and Data Request 43 in this response document), the BP Refinery and WBMWD are evaluating supply options and WBMWD is preparing a Feasibility Study for the expansion of its recycled water facilities. The conversion to reclaimed supplies related to the fifth train and the existing Watson Cogeneration Facility is expected to occur in two phases. Completion of the first phase, supplying nitrified water to the cooling tower cells, is expected by December 2012. The nitrified water would cover the requirements of the existing cooling tower cells as well as the two new cooling tower cells required by the Project. Completion of the second phase, supplying RO water to the boilers, is expected between December 2012 and July 2013. If it becomes necessary to stagger the implementation of the RO water supply, the RO water will first be supplied to cover the boiler feedwater requirements of the fifth train, and, if available then the requirements of the existing units. Until that time, the boiler feed water necessary to operate existing Units No. 1 through No. 4 will continue to be supplied by the BP Refinery and sourced from the California Water Services Company and on-site groundwater wells.

Metering Requirements for Watson Cogeneration

AFC Figure 5.5-1, Water Balance Flow Diagram, has been reprinted for this response to Data Request 48 for convenient reference. No changes have been made to this figure.

The Watson Cogeneration Steam and Electric Reliability Project (Project) will install and maintain metering devices to monitor the following:

- Steam delivery to the Refinery Steam Header (line M, AFC Figure 5.5-1, Water Balance Flow Diagram),
- Water delivery to the Refinery High Pressure Water System (line L, AFC Figure 5.5-1, Water Balance Flow Diagram), and
- Wastewater Discharge (line P, AFC Figure 5.5-1, Water Balance Flow Diagram).

The Applicant objects to the proposed condition of certification for measuring the vent flow from the blowdown tank (Line K in AFC Figure 5.5-1, Water Balance Flow Diagram), due to its impracticality. In place of the proposed condition, the Applicant proposes to provide design calculations for the blowdown tank during the detailed design stage to demonstrate vent flow.

The Applicant objects to the proposed condition of certification for measuring the flow in Line Q of AFC Figure 5.5-1, Water Balance Flow Diagram, due to its impracticality. In place of the

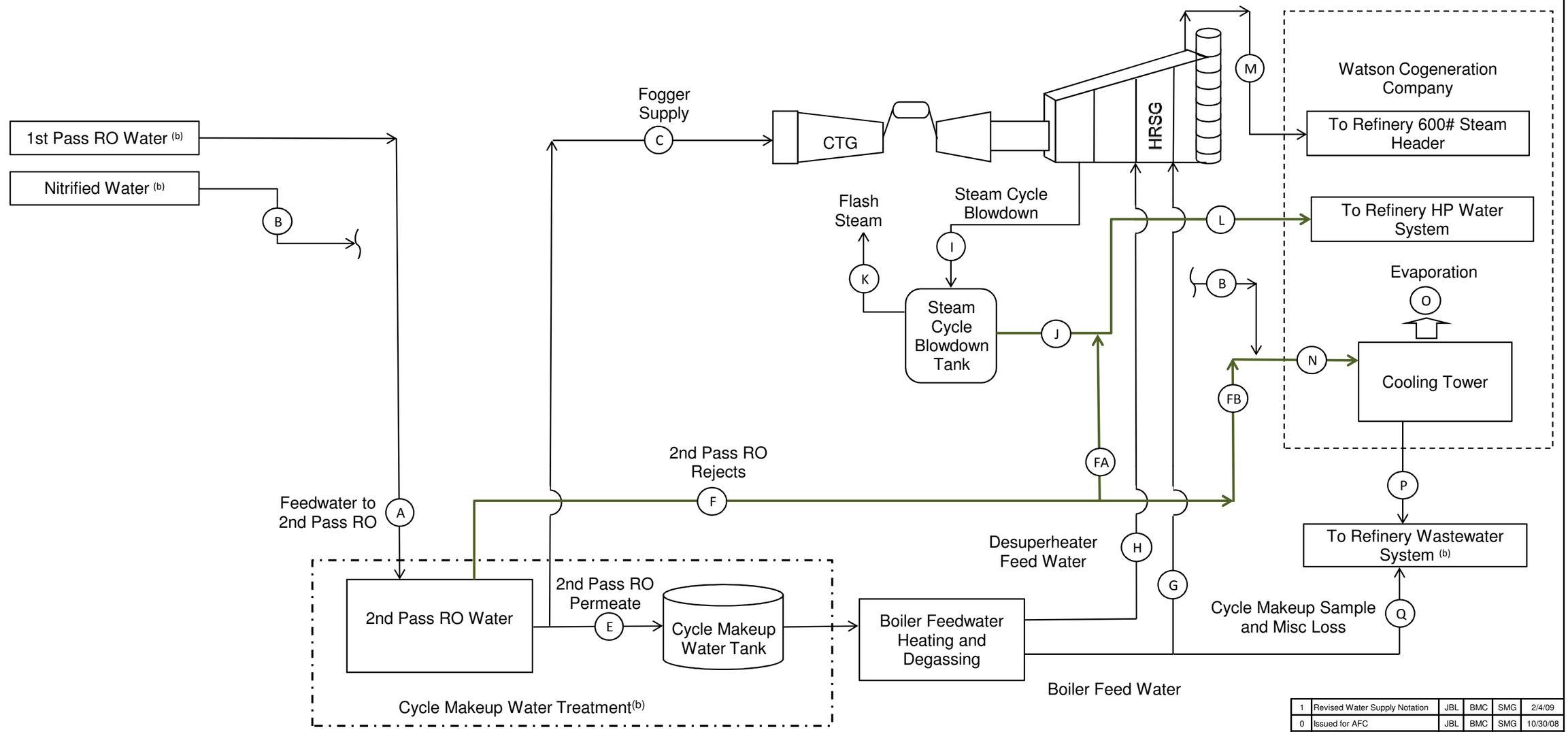
proposed condition, the Applicant proposes to provide during the detailed design stage the calculations or manufacturers' drawings for the cycle makeup sampling flow rate.

Proposed Minimum and Maximum Limits on Transfer of Water to BP Refinery

The Applicant objects to this proposed condition of certification insofar as it proposes limitations regarding the operation of the existing refinery and the existing permitted Watson Cogeneration Facility, rather than the Project. Limitations regarding the existing refinery and permitted Facility are beyond the scope of this proceeding, not relevant, and unduly burdensome. Without waiving this objection, the Applicant will voluntarily provide certain information and agree to certain conditions of certification in response to this request.

Annual Water Use and Water Delivery Summary

The Applicant is amenable to preparing an Annual Water Use Summary and Water Delivery Summary for the Watson Cogeneration Facility, as described in this Data Request.



Notes:
a. Bold green flow lines indicate waste water reuse
b. Utilities services provided by Refinery; not part of the 5th Train Project.

Rev	DESCRIPTION	Dwn	Chk	App	Date
1	Revised Water Supply Notation	JBL	BMC	SMG	2/4/09
0	Issued for AFC	JBL	BMC	SMG	10/30/08

Watson Cogeneration Steam and Electric Reliability Project

Kiewit
8455 Lenexa Drive
Lenexa, Kansas 66214

WATER BALANCE FLOW DIAGRAM
FIGURE 5.5-1

	by	date	DRAWING NUMBER
Drawn	JAR	8/22/08	2007-047-WB-001-01
Checked	BMC	8/22/08	
Approved	SMG	8/22/08	

Not for Construction

Preliminary Draft Drainage, Erosion, and Sediment Control Plan (DESCP)

Watson Cogeneration Steam and Electric Reliability Project

City of Carson, California

Submitted to the:

California Energy Commission

(09-AFC-01)

Submitted by:

Watson Cogeneration Company

With Technical Assistance by:

Kiewit Power Engineers

Lenexa, Kansas

January 2010

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Post-Development Construction Laydown and Parking Area Drainage Calculations

Section 1: Introduction

This Preliminary Draft Drainage, Erosion, and Sediment Control Plan (DESCP) has been prepared in anticipation of the California Energy Commission's (CEC) approval of the proposed expansion of the Watson Cogeneration Steam and Electric Reliability Project (Project). The DESCP describes measures that will be implemented to control erosion and sedimentation associated with the Project. The Project will add a nominal 85 megawatts (MW) combustion turbine generator (CTG) with a single-pressure heat recovery steam generator (HRSG) to provide additional process steam to the BP Carson refinery. The existing Watson Cogeneration Steam and Electric Reliability plant was originally designed to accommodate the new unit. The Project is located in the City of Carson in Southern California.

As part of detail design, at a later date, and general construction permit, a Storm Water Pollution Prevention Plan (SWPPP) will be prepared to implement and monitor Best Management Practices (BMPs) during construction activities. Water Quality Management Plan (WQMP) will also be prepared and made part of detail design to implement post-construction BMPs. Both SWPPP and WQMP will describe the objectives, method of implementation, inspection and maintenance of BMPs.

1.1 Drainage, Erosion, and Sediment Control Plan Elements

This Drainage Erosion and Sediment Control Plan (DESCP) includes the following elements:

Vicinity Map – A map indicating the location of all Project elements with depictions of all significant geographic features including swales, storm drains, and sensitive areas.

Site Delineation – All areas subject to soil disturbance for the Watson Cogeneration Steam and Electric Reliability Project (Project Site, Construction Laydown and Parking Area, demolition areas, landscaping areas, and other Project elements) are delineated showing boundary lines of all construction/demolition areas and the location of all existing and proposed structures, pipelines, roads, and drainage facilities. The Construction Laydown and Parking Area is proposed to have no earthwork activities; therefore, it is not shown on the Site Delineation Map.

Watercourses and Critical Areas – The DESCP shows the location of all nearby watercourses including swales, storm drains, and drainage ditches, and their proximity to the Project Site.

Drainage – The DESCP provides topographic map showing all existing, interim, and proposed drainage systems and drainage area boundaries. Drainage plans have been created using a 1-inch = 100-foot scale for both the Project Site and Construction Laydown and Parking Area.

Clearing and Grading – The DESCP provides a delineation of all areas to be cleared of vegetation and areas to be preserved. The plan provides elevations, slopes, locations, and the extent of all proposed grading as shown by contours.

BMPs – The DESCP describes the location, timing and maintenance schedule of BMPs to be used.

1.2 Project Overview

The Project Site is located approximately 0.7 miles south of the 405 Freeway, roughly bounded by East 223rd Street to the north, Wilmington Avenue to the west, East Sepulveda Boulevard to the south, and South Alameda Street to the east, in the City of Carson. The Project Site is a 2.5-acre brown field site located within the boundary of the existing Watson Cogeneration Facility, which is a 21.7-acre area within the 428-acre parcel, Assessors Parcel Number (APN) 7315-006-003, 1801 Sepulveda Boulevard, Carson California 90745. The street address of the Project Site is located within the boundary of the existing Watson Cogeneration Facility at 22850 South Wilmington Avenue, Carson, California.

The Construction Laydown and Parking Area is a paved 25-acre parcel (APN 7315-020-019) located approximately 1 mile southeast of the Project Site, at 2149 East Sepulveda Boulevard which is at the northeast corner of East Sepulveda Boulevard and South Alameda Street. The area is owned by BP and is currently used as a truck parking and staging area.

The Vicinity Map, Figure 1, shows the Project Site, Construction Laydown and Parking Area, and immediate features surrounding them. (All drawings are located in Appendix A.)

1.3 Site Delineation

Figure 2, Site Delineation Map, shows the areas subject to soil disturbance for the Project Site. It is anticipated the Construction Laydown and Parking Area will not be subject to any soil disturbance. Boundary lines of all construction activity will be further defined in the final design phase of the Project and the DESCP will be updated to reflect these changes.

1.4 Watercourses and Critical Areas

The Project Site is located within the Dominguez Channel Watershed in California. The Dominguez Channel is located to the east of the Project Site and Construction Laydown and Parking Area.

Project Site

Runoff from the Project Site currently enters the Dominguez channel. After the completion of the Project, runoff from the fifth train will be directed to the oily water system at the BP Refinery for treatment prior to discharge to the Los Angeles County Sanitation Districts (LACSD) wastewater treatment plant. Therefore, the Project will have no significant effects on the water resources. See Figure 3, Watercourses and Critical Areas Map, in Appendix A for locations of waterways.

Construction Laydown and Parking Area

Runoff from the Construction Laydown and Parking Area currently enters the Dominguez Channel. No improvements are proposed for the Construction Laydown and Parking Area; therefore, it will continue to enter the Dominguez Channel post construction. During the construction phase, the workers' parking area will be separated from the Construction Laydown area in order to address storm water quality requirements during equipment staging.

1.5 Project Ownership

The expansion of the Watson Cogeneration Steam and Electric Reliability Project will be owned by Watson Cogeneration Company. The Project operator will be BP West Coast Products, LLC – BP Carson Refinery.

Section 2: Drainage

Existing Project Site and Construction Laydown and Parking Area Conditions

The Project Site is within the existing Watson Cogeneration Facility and is paved and graveled with minimal slope. The Project Site currently drains to the storm water system (Clean Water System) through a series of catch basins. The Clean Water System drains to the Dominguez Channel.

The Construction Laydown and Parking Area is currently paved and used as a truck parking and staging area. The existing slope is approximately 1 percent from the North and South portions of the parking lot towards the center. Catch basins convey runoff through storm water pipes in a west to east fashion to outlet to the Dominguez Channel.

Proposed Project Site and Construction Laydown and Parking Area Conditions

The portion of the Project Site that contains the fifth train will drain through a system of drain inlets and pipes to the Oily Water System of the BP Refinery. The Oily Water System discharges to the Los Angeles Sanitation District facilities, and not to adjacent surface waters. During initial phases of construction the existing storm water will be permanently relocated away from the construction area to allow for the proposed fifth train and proposed storm water system to be installed. The southerly most portion of the fifth train power island limited by a proposed berm and site roads will continue to drain to the existing Clean Water System (See Figure 4). The Soil Conservation Service (SCS), formally the Natural Resources Conservation Service (NRCS), method was used to size the storm sewer system. The drainage network was sized for the 100-year 24-hour storm event. The remainder of the Watson Cogeneration Facility will continue to drain to the Clean Water System.

The Parking Area will have no changes to the existing drainage. The Construction Laydown area will be separated from the Parking Area by jersey barriers and sand bags to mitigate the flow of runoff to the Dominguez Channel.

Table 2.1 Hydrologic Analyses for Predevelopment and Post-Development Conditions shows precipitation and discharge data for the 24-hour 100-year storm events for predevelopment and post-development conditions for the Project Site and Construction Laydown and Parking Area. Drainage calculations are located in Appendix B.

The peak flow rates shown on Table 2.1 were determined using a computer-aided, watershed modeling software called Hydraflow Hydrographs. This program utilizes the NRCS' TR-55 methods. Precipitation data and soil group information were obtained from the NOAA's Hydrometeorological Design Studies Center.

Table 2.1: Hydrologic Analyses for Predevelopment and Post-Development Conditions

	Fifth Train Power Block Predevelopment	Fifth Train Power Block Post-Development	Construction Laydown & Parking Area Predevelopment	Construction Laydown & Parking Area Post-Development
Area (acres)	2.36	2.36	18	18
Runoff Coefficient	95	98	98	98
Precipitation – 24-hour 100-Year Storm (inches)	6.50	6.50	6.50	6.50
Discharge - 100-Year Storm to Oily Water System (cubic feet per second)	0	9.106	0	0
Discharge – 100-Year Storm to Clean Water System (cubic feet per second)	11.48	2.737	89.52	89.52

Erosion and Sediment Control

Project Site

Silt fences will be installed within the Fifth Train Power Block to prevent sediments in storm water runoff from leaving the Project Site during construction activities. Temporary and permanent ditches that carry runoff will be protected against erosion during construction with straw bale barriers and/or silt fences. As permanent storm sewer pipes are added during construction, they will be protected from receiving sediments using BMP SE-10, Storm Drain Inlet Protection[1]. Runoff during construction will be directed to the Oily Water System through the proposed storm water system with BMPs installed to control erosion and sediment.

Areas disturbed during construction will be stabilized with suitable material until the final surface is established. All construction entrances will be monitored for sediment tracking. Dust will be controlled during construction, as needed, by watering. All erosion control measures will be in accordance with Section 3 of the California Stormwater BMP Handbook-Construction.

Construction Laydown and Parking Area

Existing inlets within the Construction Laydown area will be protected from receiving sediments using BMP SE-10, Storm Drain Inlet Protection[1]. No changes or additional BMP measures will be added to the workers' parking area since it was already intended to serve as a parking facility. All erosion control measures will be in accordance with Section 3 of the California Stormwater BMP Handbook-Construction.

[1] California Stormwater BMP Handbook-Construction. California, 2003.

Section 3: Clearing and Grading

3.1 Areas to be Cleared and Graded

The Project Site is currently paved and graveled. Current surfacing will be removed and properly disposed of for foundation and underground work. The Construction Laydown and Parking Area surface will not be disturbed during construction. Neither the Project Site nor the Construction Laydown and Parking Area have exposed soil or vegetation.

3.2 Location of Disposal Areas, Fills or Other Special Areas

It is anticipated that approximately 7,000 cubic yards (cy) of soil will be removed from the Project Site and disposed of in accordance with all applicable state and federal regulations for waste removal. The location of the disposal area is not currently known but will be determined during detailed design. Project improvements will be designed to withstand the effects of expansive soils, or the expansive soils will be removed or graded to mitigate the effects. Recommendations for the mitigation of expansive soils will be provided as part of a design-level geotechnical investigation.

3.3 Existing and Proposed Topography

Project Site

The existing Project Site depicts an average slope of less than 1 percent in any direction. At the completion of the Project, the Project Site will be divided into multiple watersheds, each sloping at a minimum of 0.5 percent towards an inlet location in each watershed. See Figure 4-Drainage Map-Project Site for topography.

Construction Laydown and Parking Area

The existing Construction Laydown and Parking Area is divided into two watersheds. Watershed A is 10.2 acres and slopes 1 percent south towards the center of the parking lot to catch basins. Watershed B is 7.79 acres and slopes 1 percent north toward the center of the parking lot to catch basins. Runoff then flows east through storm water pipes to outlet at the Dominguez Channel. During construction, it is not anticipated that the drainage patterns or slopes will change, therefore at the completion of the Project the Construction Laydown and Parking Area slopes will remain the same. See Figure 5-Drainage Map-Construction Laydown and Parking Area for topography.

3.4 Volumes of Cut and Fill

It is estimated that a balance of approximately 7,000 cubic yards (cy) of soil unsuitable for construction will be cut from the Project Site where the fifth train is to be placed. This soil will be removed and disposed of following all applicable state and federal regulations for waste removal. The excavation will be filled and compacted with approximately 7,000 cy of clean soil suitable for construction. See Figure 6-Clearing and Grading. It is anticipated that no earthwork activities will be completed within the Construction Laydown and Parking Area.

3.5 Gas Pipeline

Fuel gases will be provided from the existing system. The existing pipe may need to be relocated around the proposed fifth train. If the existing pipe will be relocated, the trench excavated for the pipeline tie-in will be entirely refilled. No surplus soil is expected.

Section 4: Best Management Practices

The Project construction will be scheduled to minimize impact on the environment by limiting the amount of exposed, untreated soil. Final grading and surfacing will be completed as soon as feasible to limit the exposure of soils. Construction is expected to proceed as efficiently as possible, thereby ensuring as little environmental impact and soil disturbance as possible. It is expected that construction will occur during the rainy season. Runoff during construction will be managed with the installation of BMPs prior to discharge to the Oily Water System. BMPs will also be installed around catch basins for the southerly most portion to remain discharging to the Clean Water System. The following sections present the selected standard construction BMPs as mentioned in the California Stormwater BMP Handbook-Construction. The resource handbook provides comprehensive details on BMP implementation and will be onsite and reviewed by managers for all construction activities that have an impact on the implementation of the DESCP.

There are six groups of BMP categories: erosion control, sediment control, tracking control, wind control, non-storm water control, and waste management and water pollution control. Each section below goes further in depth to explain the recommended location, timing and maintenance schedule for the selected BMPs at the Project Site and Construction Laydown and Parking Area.

A mitigation-monitoring plan will be developed as part of the SWPPP to ensure performance standards and to monitor the effectiveness of BMPs. This plan will address the timing and methods of such measures, as well as reporting and response requirements. All personnel associated with or specifically assigned to the implementation and maintenance of BMPs will receive training to inspect, maintain, recognize and report abnormal/adverse situations that affect the BMP effectiveness. See Figures 7 and 8 present planned locations of silt fences and hay bales at the Project Site and Construction Laydown and Parking Area, respectively. An expected schedule of construction activities is shown below in Table 4.1.

Table 4.1 Expected Schedule of Construction Activities

Construction Activity	Date
Site Mobilization	September 2010
BMPs In Place	September 2010
Construction Begins	September 2010
Rainy Season Begins	October 2010 (Typical)
Underground Systems Installation	October 2010 through February 2011
Concrete Installations	December 2010 through July 2011
End of Rainy Season	April 2011 (Typical)
Equipment Erection	April 2011 through January 2012
Above Ground Systems Installation	August 2011 through July 2012
Plant StartUp	August 2012 through February 2013
BMPs Removed	August 2012

4.1 Erosion Control

Erosion control BMPs protect the soil surface by covering and/or binding soil particles. The following are the erosion control measures that will be used during various phases of the Project:

- EC-1, Scheduling
    - Grading and construction will be sequenced to minimize the amount and duration of soil exposed to erosion by wind, rain, runoff and vehicle tracking. As changes in the schedule are needed, special consideration will be used for avoiding the rainy season and monitoring the schedule to avoid grading work during forecasted hazardous weather.

As with all erosion control measures, it is important to apply temporary erosion control to remaining active and non-active areas as required by the California Stormwater BMP Handbook-Construction; reapplying as necessary to maintain effectiveness. Implement erosion control prior to the defined rainy season. Temporary erosion control measures will then be applied at regular intervals throughout the defined rainy season. Stabilization of all non-active areas will be done as soon as feasible after the cessation of construction activities. At the completion of construction, permanent erosion control will be applied to all remaining disturbed soil areas.

4.2 Sediment Control

Sediment control measures are put in place as found necessary when sediment on site is being displaced by water flowing across the site. The following are sediment control measures that will be used during various phases of the Project:

- SE-1, Silt Fence
- SE-7, Street Sweeping and Vacuuming
- SE-9, Straw Bale Barrier
- SE-10, Storm Drain Inlet Protection

Sufficient quantities of temporary sediment control materials will be maintained onsite throughout the duration of the Project. Implementation of all temporary sediment controls will be in place in the event of predicted rain, and for rapid response to failures.

All sediment controls will be implemented during the rainy and non-rainy season according to BMP specifications. All inlets will be protected until work is completed and final controls and surfacing are in place.

4.3 Tracking Controls

Tracking controls will be implemented to reduce sediment from entering public or private roads. The following are tracking control measures that will be used during various phases of the Project:

- TC-1, Stabilized Construction Entrance/Exit
    - A stabilized construction entrance/exit will be constructed and maintained at construction site entrances and exits, equipment yards, water filling area for water trucks, and Project office location.
    - The site entrance/exit will be stabilized to reduce erosion and the tracking of sediment as a result of construction traffic. The entrance will be designed and graded to prevent

- SE-7, Street Sweeping and Vacuuming
    - Asphalt or concrete road sweeping will occur during soil hauling and as necessary to keep street surfaces clear of soil and debris. Washing of sediments tracked onto streets and into storm drains will not be allowed.

4.4 Wind Erosion

Wind erosion controls will be implemented to control dust levels on the construction site. The following are wind erosion control measures that will be used during various phases of the Project:

- WE-1, Wind Erosion Control
- NS-1, Water Conservation Practices
    - BMP WE-1, Wind Erosion Control, and BMP NS-1, Water Conservation Practices, will be implemented to provide dust control and prevent discharges from dust control activities and water supply equipment. Water application rates will be minimized as necessary to prevent runoff and pond formations; water equipment leaks will be repaired immediately.

Water will be applied to disturbed soil areas of the Project Site to control dust and maintain optimum moisture levels for compaction. The water will be applied using water trucks. As shown on the Project schedule, construction will commence in September 2010 and conclude in August 2012. Water application will be concentrated during the dry season. Water will be applied as needed to prevent dust from leaving the Project Site.

During windy conditions (forecast or actual wind speed of approximately 25 mph or greater), dust control will be applied to the disturbed soil areas, including haul roads, to adequately control wind erosion.

4.5 Non-Storm Water Control

For construction activities that may produce non-storm water discharges, the following BMPs will be used to control non-storm water pollution on the construction site:

- NS-1, Water Conservation Practices
- NS-3, Paving and Grinding Operations
- NS-6, Illicit Connection/Illegal Discharge Detection and Reporting
- NS-8, Vehicle and Equipment Cleaning
- NS-9, Vehicle and Equipment Fueling
- NS-10, Vehicle and Equipment Maintenance
- NS-12, Concrete Curing
- NS-13, Concrete Finishing

This Project will implement the following practices for effective temporary and final erosion control during construction:

- Water Conservation Practices
  - BMP NS-1, Water Conservation Practices, will be implemented to provide dust control and prevent discharges from dust control activities and water supply equipment. Water application rates will be minimized as necessary to prevent runoff and pond formation; water equipment leaks will be repaired immediately.
- Paving and Grinding Operations
  - The Contractor will implement BMP NS-3, Paving and Grinding Operations, to prevent paving materials from being discharged off-site.
- Illicit Connection/Illegal Discharge Detection and Reporting
  - The Contractor will implement BMP NS-6, Illicit Connection/Illegal Discharge Detection and Reporting, throughout the duration of the Project.
- Vehicle and Equipment Cleaning
  - Several types of vehicles and equipment will be used on site throughout the Project, including excavators, loaders, paving equipment, rollers, trucks and trailers, backhoes, forklifts, cranes, and compressors. NS-8, Vehicle and Equipment Cleaning, will be used to prevent pollutants from entering the storm water discharges.
- Vehicle and Equipment Fueling
  - A temporary fueling area will be constructed in the Contractor's yard. All self-propelled vehicles will be fueled off site or at the temporary fueling area. Fuel trucks, each equipped with absorbent spill clean-up materials, will be used for all on-site fueling, whether at the temporary fueling area or for mobile fueling elsewhere on the site. Drip pans will be used for all mobile fueling. The fueling truck will be parked on the fueling area for overnight storage.
  - All vehicle maintenance and mobile fueling operations will be conducted at least 50 feet away from operational inlets, drainage facilities and on a level graded area.
- Vehicle and Equipment Maintenance
  - Drip pans or absorbent pads will be used for all vehicle and equipment maintenance activities that involve grease, oil, solvents, or other vehicle fluids.
- Concrete Curing
  - The contractor will implement BMP NS-12, Concrete Curing, when the curing process occurs.
- Concrete Finishing
  - The contractor will implement BMP NS-13, Concrete Finishing, to contain runoff, dispose of hazardous waste, and control dust.

4.6 Waste Management and Materials Pollution Control

Various chemicals will be stored and used during the construction and the operation of Watson Cogeneration Project. The following BMPs will be used to handle materials and control construction site wastes:

- WM-1, Material Delivery and Storage
- WM-2, Material Use
- WM-3, Stockpile Management

- WM-4, Spill Prevention and Control
- WM-5, Solid Waste Management
- WM-6, Hazardous Waste Management
- WM-7 Contaminated Soil Management
- WM-8, Concrete Waste Management
- WM-9, Sanitary/Septic Waste Management

This Project will implement the following practices for effective temporary and final erosion control during construction:

- Material Delivery, Storage and Use
    - Two types of storage/containment facilities will be provided within the storage area to minimize storm water contact with construction materials:
        - A warehouse will be used to store handtools, small parts and most construction materials that can be carried by hand, such as paint cans, solvents and grease.
        - Hazardous liquids will be stored in a separate enclosed building with a containment facility. The diesel storage tank will be doubled wall with the capacity to hold 100 percent of the diesel tank volume. The other part of the containment facility will have the containment volume of 100 percent of the largest tank volume.

Very large items, such as light standards, framing materials, and stockpiled lumber, will be stored in the open in the general storage area. Such materials will be elevated with wood blocks to minimize contact with run-on storm water.

Material safety data sheets (MSDS), material inventory, and emergency contact numbers will be maintained and stored in the office complex in the contractor's yard. Spill clean-up materials will be stored in the maintenance building.

Safety showers and eyewashes will be provided in the vicinity of all chemical storage and use areas. Hose connections will be provided near the chemical storage and feed areas to flush spills and leaks to the plant wastewater collection system. Plant personnel will use approved personal protective equipment during chemical spill containment and cleanup activities. In case of a chemical spill or accidental release, personnel will be properly trained in the handling of these chemicals and instructed in the procedures to follow. Adequate supplies of absorbent material will be stored on site for spill cleanup.

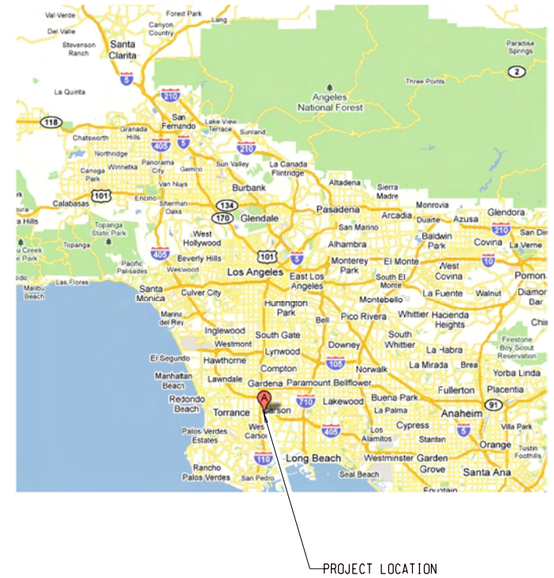
- Waste Management
    - Solid Waste and Hazardous Waste Management will be implemented to minimize storm water contact with waste materials and prevent waste discharges. Solid wastes will be loaded directly into trucks for off-site disposal. When on-site storage is necessary, solid wastes will be stored in dumpsters in the general storage area of the Contractor's yard. Hazardous wastes will be stored in the shipping containers or covered containment facility discussed above for materials storage. Hazardous wastes will be stored in appropriately and clearly marked containers and segregated from other non-waste materials.

- Contaminated Soil Management
    - When contaminated soils are encountered, the County Engineer and either the State of California Department of Toxic Substances Control or the County Fire Department, Hazardous Material Division will be notified. The contaminated soils will be contained, covered if stockpiled, and disposed of per WM-7, Contaminated Soil Management, and the contract documents. Employees will be instructed to recognize evidence of contaminated soil, such as buried debris, discolored soil, and unusual odors. The contaminated soil will not be handled by the grading contractor unless the contractor has proper training for this activity.

- Concrete Residuals and Washout Wastes
    - BMP WM-8, Concrete Waste Management, will be implemented and a concrete washout facility will be constructed and maintained at the Contractor's yard. All excess concrete and concrete washout slurries will be discharged to the washout facility for drying. The washout will provide sufficient volume to contain concrete washout wastes and waste collected from any concrete saw-cutting operations. BMP maintenance, waste disposal, and BMP removal will be conducted as described in WM-8. Dried-off concrete will be used as fill material, if permitted by the County Engineer.

- Sanitary and Septic Wastes
    - The Contractor will implement BMP WM-9, Sanitary and Septic Waste Management, and portable toilets will be maintained for the duration of the Project. Weekly maintenance will be provided and wastes will be disposed of off-site. The toilets will be located away from the concentrated flow paths and traffic flow.

Appendix A
Drawings



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SCALE IN FEET

SCALE: 1" = 500'

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REV	DESCRIPTION	DWN	CHK	APP	DATE
A	PRELIMINARY	MTW	SJM	SMG	12-22-09

WATSON COGENERATION STEAM
AND ELECTRIC RELIABILITY PROJECT

Kiewit

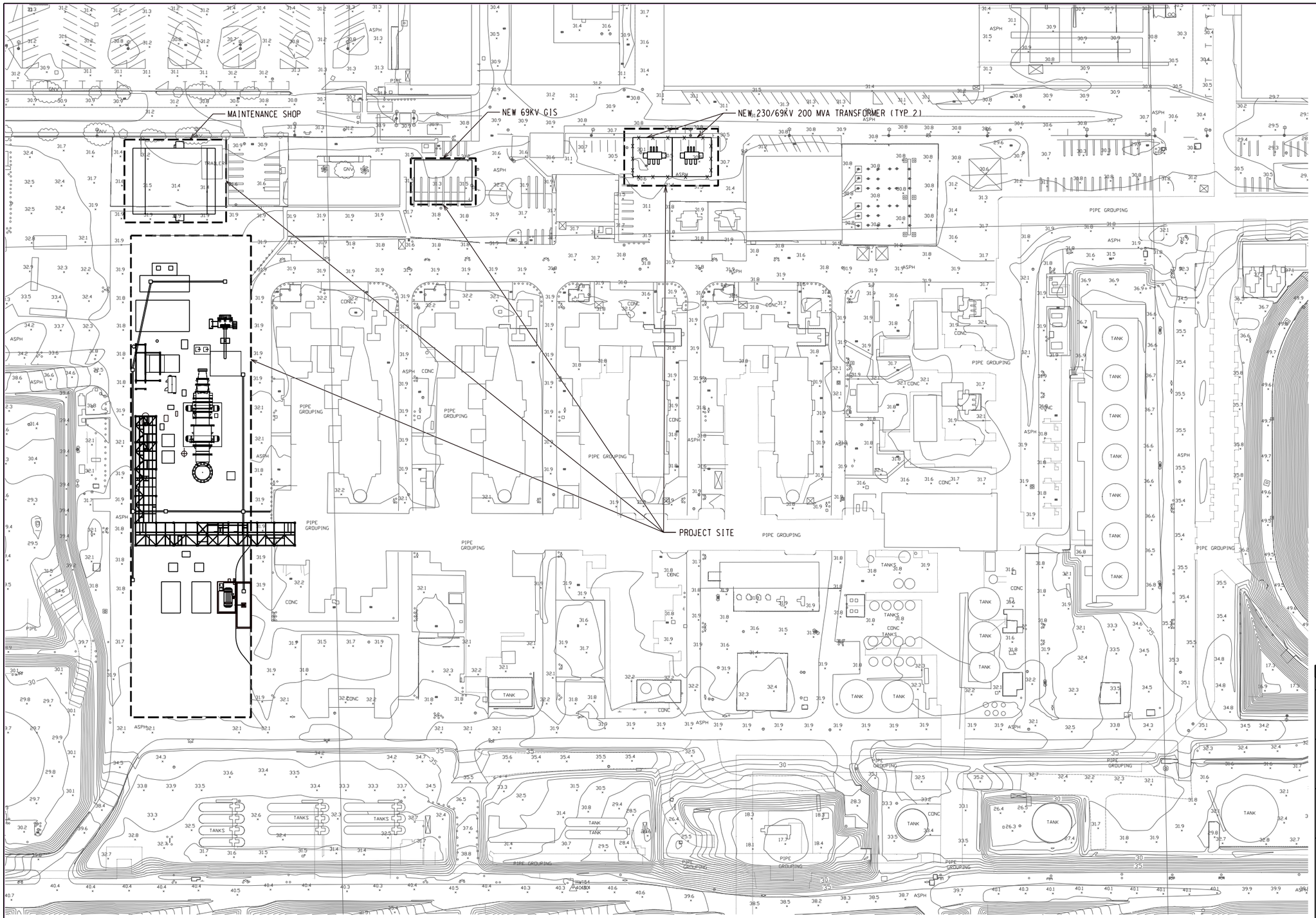
Kiewit Power
9401 Renner Boulevard
Lenexa, Kansas 66219

FIGURE 1 - VICINITY MAP

	by	date
DESIGNED	MTW	12-21-09
DRAWN	MTW	12-21-09
CHECKED		
APPROVED		

DRAWING NUMBER

2007-047-CM-201



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REV	DESCRIPTION	DWN	CHK	APP	DATE
A	PRELIMINARY	MTW	SJM	SMG	12-22-09

WATSON COGENERATION STEAM AND ELECTRIC RELIABILITY PROJECT

Kiewit

Kiewit Power
9401 Renner Boulevard
Lenexa, Kansas 66219

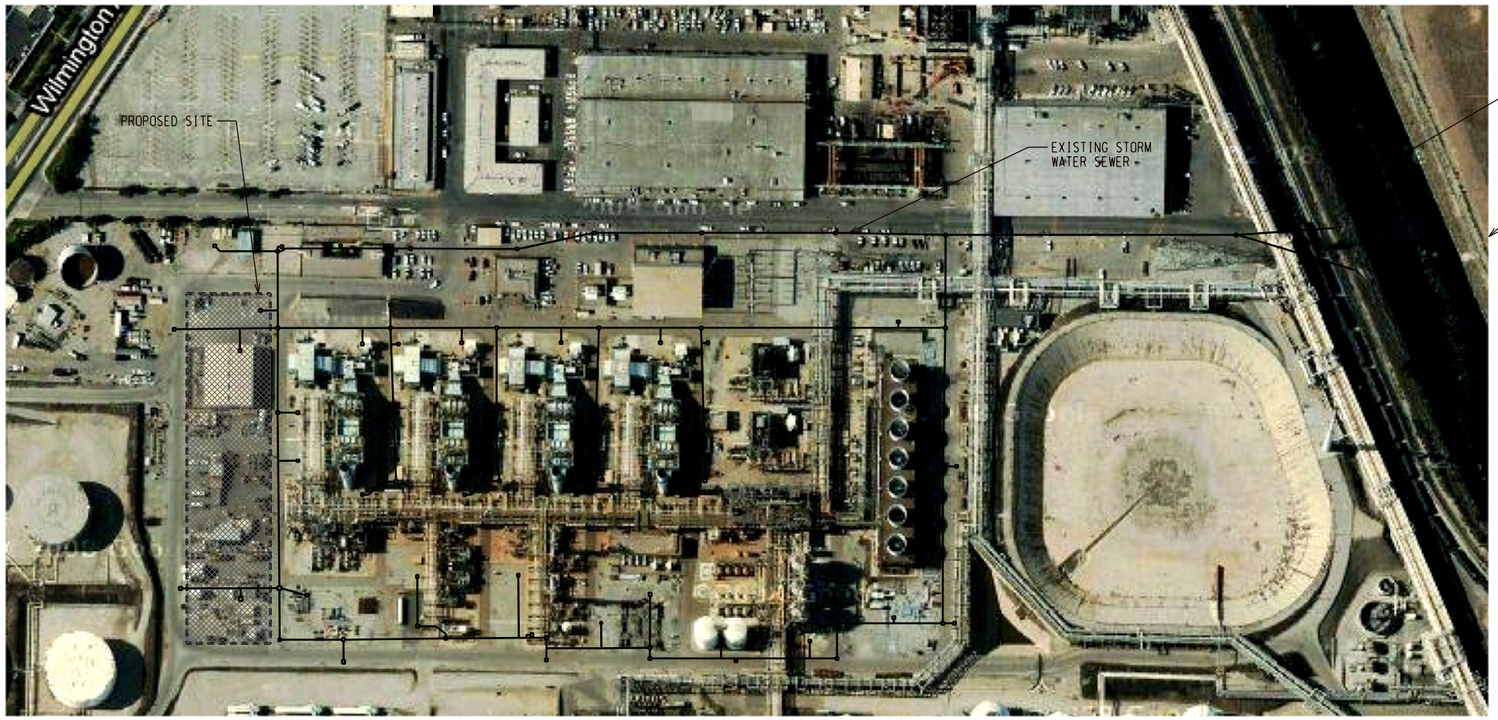
FIGURE 2 - SITE DELINEATION MAP

	by	date
DESIGNED	MTW	12-21-09
DRAWN	MTW	12-21-09
CHECKED		
APPROVED		

DRAWING NUMBER

2007-047-CM-202

2007-047-CM-202.dgn 12/28/2009 2:06:50 PM Stephen.Moore



100 0 100 200
SCALE IN FEET
SCALE: 1" = 100'-0"

N

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REV	DESCRIPTION	DWN	CHK	APP	DATE
A	PRELIMINARY	AMB	SJM	SMG	12-22-09

WATSON COGENERATION STEAM
AND LELECTRIC RELIABILITY PROJECT

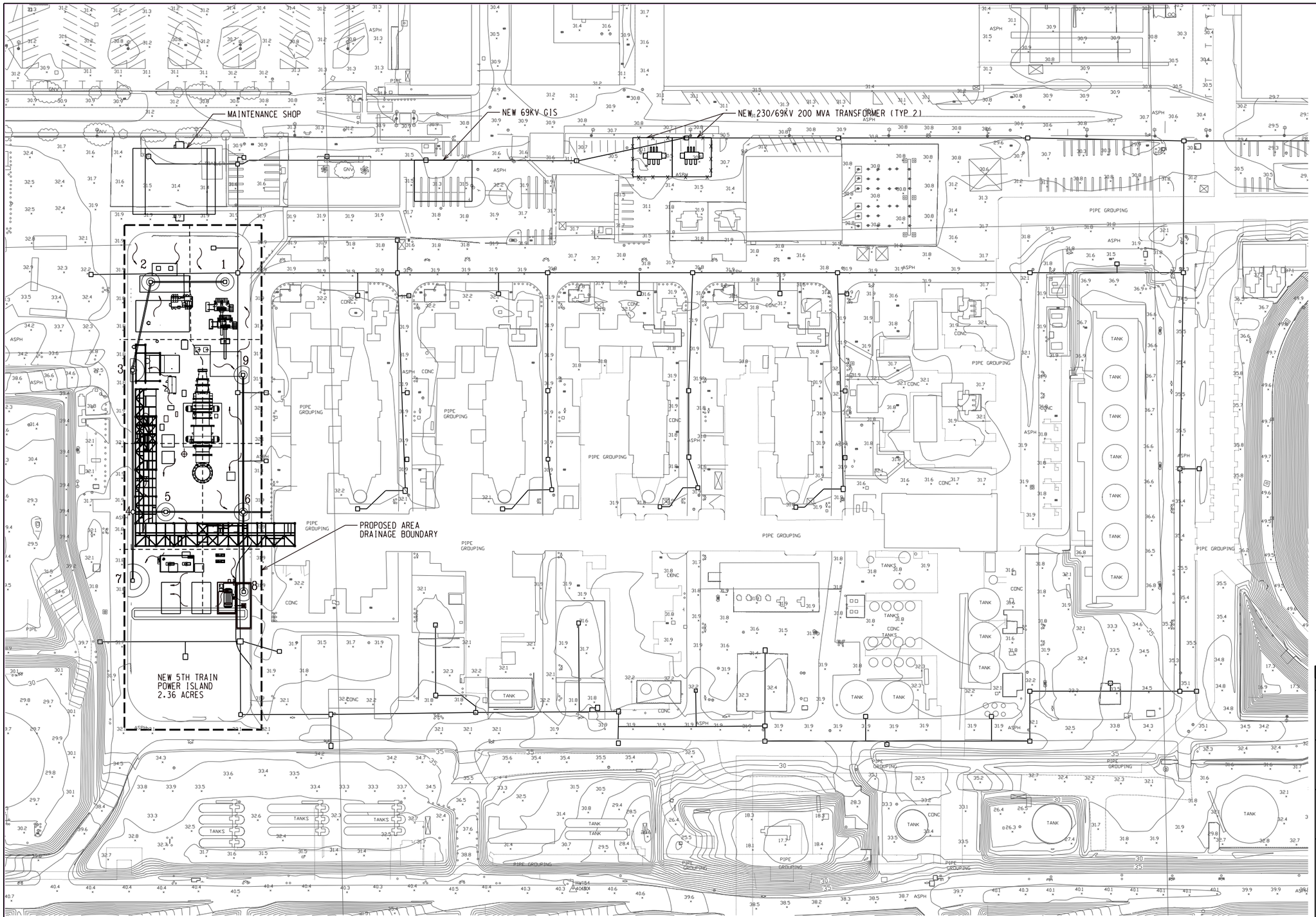
Kiewit

Kiewit Power
9401 Renner Boulevard
Lenexa, Kansas 66219

FIGURE 3 - WATERCOURSES
AND CRITICAL AREAS MAP

	by	date
DESIGNED	AMB	12-18-09
DRAWN	AMB	12-18-09
CHECKED		
APPROVED		

DRAWING NUMBER
2007-047-CM-203



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REV	DESCRIPTION	DWN	CHK	APP	DATE
A	PRELIMINARY	MTW	SJM	SMG	12-22-09

WATSON COGENERATION STEAM AND ELECTRIC RELIABILITY PROJECT

Kiewit

Kiewit Power
9401 Renner Boulevard
Lenexa, Kansas 66219

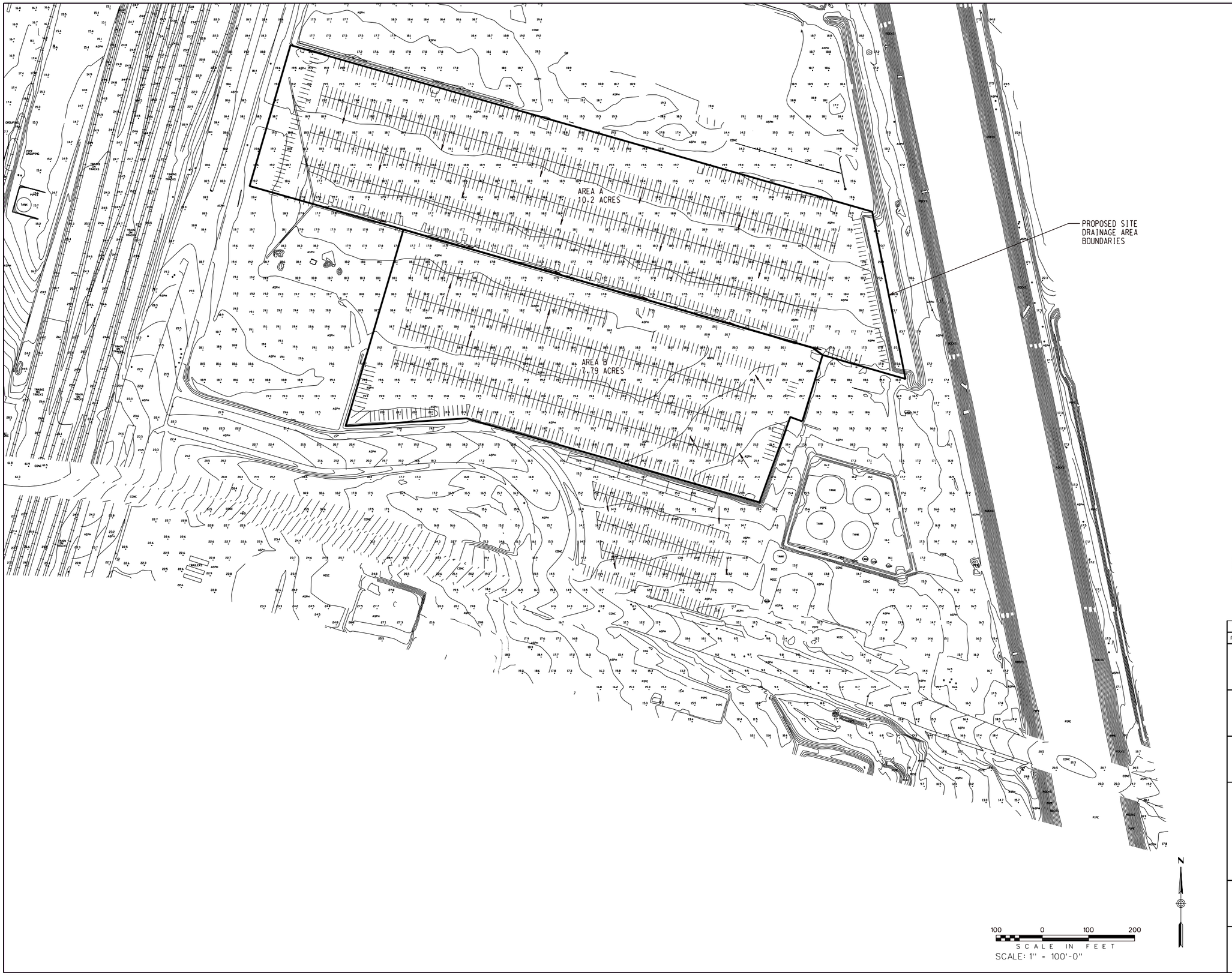
FIGURE 4 - DRAINAGE MAP - PROJECT SITE

	by	date
DESIGNED	MTW	12-21-09
DRAWN	MTW	12-21-09
CHECKED		
APPROVED		

DRAWING NUMBER

2007-047-CM-204

2007-047-CM-204.dgn 12/28/2009 2:19:52 PM Stephen.Moore



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REV	DESCRIPTION	DWN	CHK	APP	DATE
A	PRELIMINARY	MTW	SJM	SMG	12-22-09

WATSON COGENERATION STEAM
AND ELECTRIC RELIABILITY PROJECT

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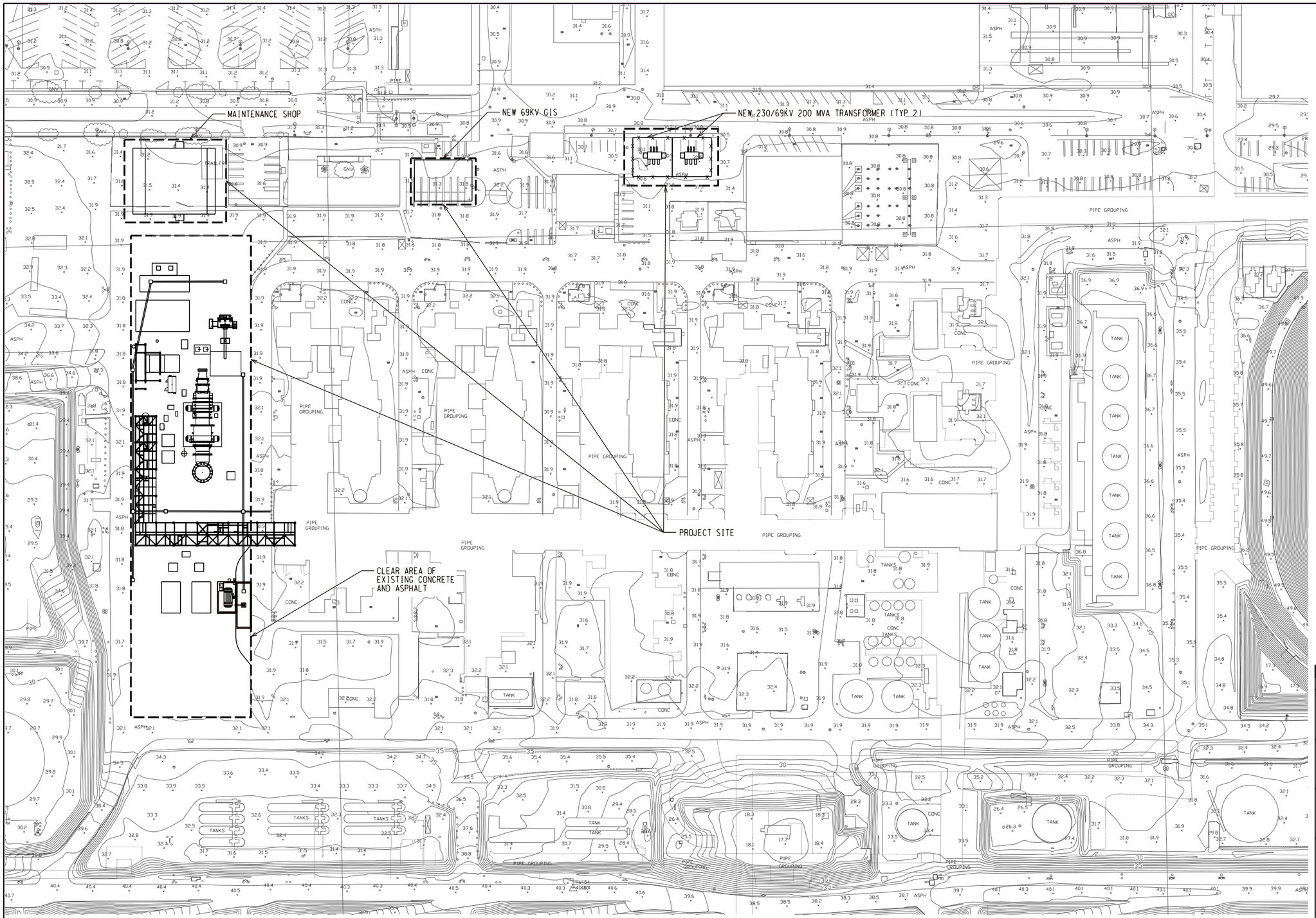
FIGURE - 5 DRAINAGE MAP- CONSTRUCTION
LAYDOWN AND PARKING AREA

	by	date
DESIGNED	MTW	12-21-09
DRAWN	MTW	12-21-09
CHECKED		
APPROVED		

DRAWING NUMBER

2007-047-CM-205

2007-047-CM-205.dgn 12/29/2009 7:22:07 PM stephen.moore



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REV	DESCRIPTION	DWN	CHK	APP	DATE
A	PRELIMINARY	MTW	SJM	SMG	12-22-09

WATSON COGENERATION STEAM
AND ELECTRIC RELIABILITY PROJECT

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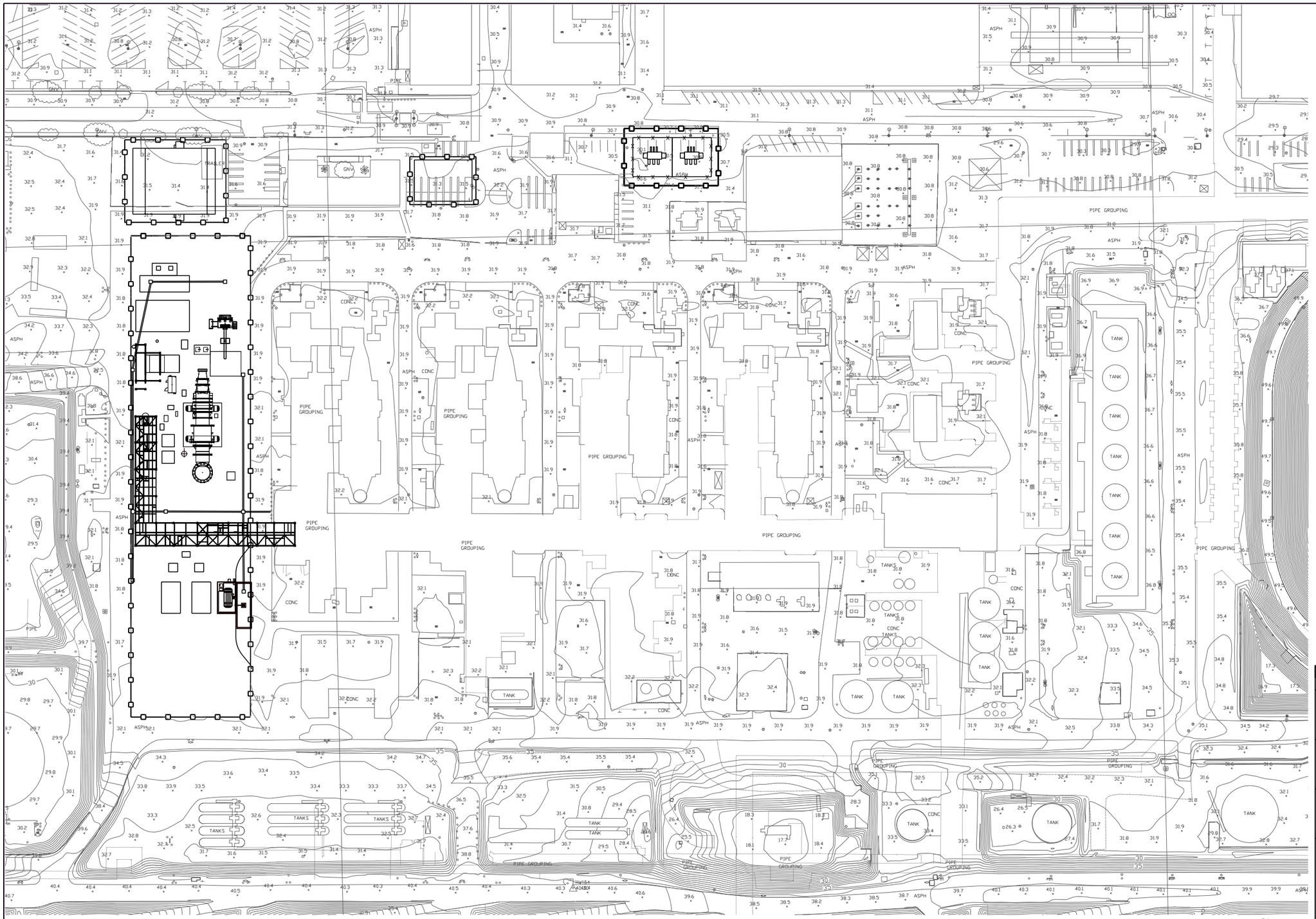
FIGURE 6 - CLEARING AND GRADING MAP

	by	date
DESIGNED	MTW	12-21-09
DRAWN	MTW	12-21-09
CHECKED		
APPROVED		

DRAWING NUMBER
2007-047-CM-206

2007-047-CM-206.dgn 12/28/2009 2:26:21 PM Stephen.Moore



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REV	DESCRIPTION	DWN	CHK	APP	DATE
A	PRELIMINARY	MTW	SJM	SMG	12-22-09

WATSON COGENERATION STEAM
AND ELECTRIC RELIABILITY PROJECT

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Lenexa, Kansas 66219

FIGURE 7 - BEST MANAGEMENT PRACTICES MAP - PROJECT SITE

	by	date
DESIGNED	MTW	12-21-09
DRAWN	MTW	12-21-09
CHECKED		
APPROVED		

DRAWING NUMBER

2007-047-CM-207

2007-047-CM-207.dgn 12/28/2009 2:28:49 PM Stephen.Moore

HAY BALES

60 0 60 120
SCALE IN FEET
SCALE: 1" = 60'-0"

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REV	DESCRIPTION	DWN	CHK	APP	DATE
A	PRELIMINARY	MTW	SJM	SMG	12-22-09

WATSON COGENERATION STEAM
AND ELECTRIC RELIABILITY PROJECT

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FIGURE 8 - BEST MANAGEMENT PRACTICES
MAP - CONSTRUCTION LAYDOWN
AND PARKING AREA

	by	date
DESIGNED	MTW	12-21-09
DRAWN	MTW	12-21-09
CHECKED		
APPROVED		

DRAWING NUMBER
2007-047-CM-208

2007-047-CM-208.dgn 12/29/2009 7:23:50 PM stephen.moore

Appendix B
Drainage Calculations

Predevelopment

Project Site Drainage Calculations

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-------	-------	-------	-------	-------	-------	-------	-------	11.48	Fifth Train Pre Development

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	11.48	1	596	52,198	----	------	------	Fifth Train Pre Development

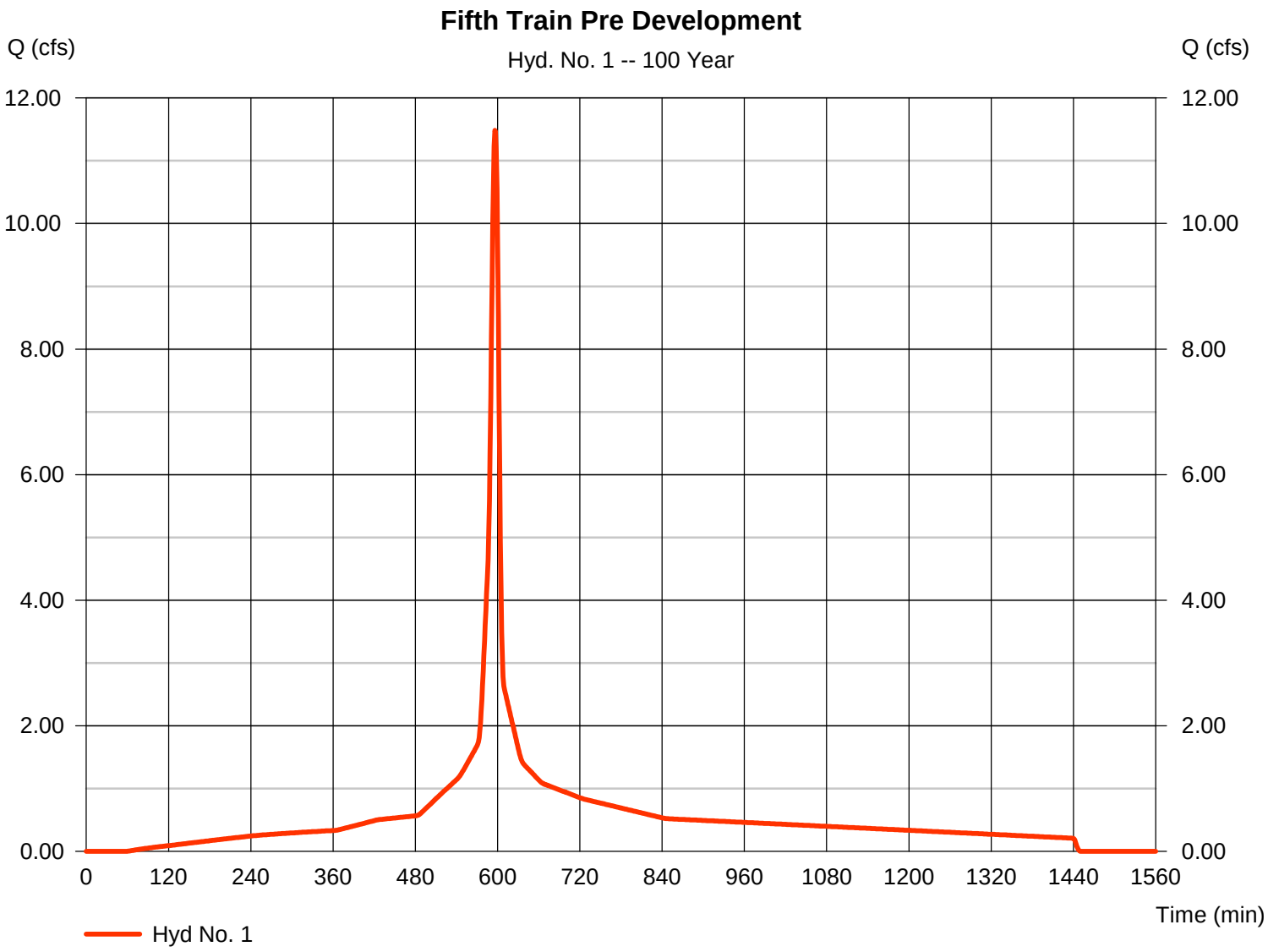
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Monday, Dec 21, 2009

Hyd. No. 1

Fifth Train Pre Development

Hydrograph type	=	SCS Runoff	Peak discharge	=	11.48 cfs
Storm frequency	=	100 yrs	Time to peak	=	596 min
Time interval	=	1 min	Hyd. volume	=	52,198 cuft
Drainage area	=	2.360 ac	Curve number	=	95
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	6.50 in	Distribution	=	Type I
Storm duration	=	24 hrs	Shape factor	=	484



Predevelopment

Construction Laydown and Parking Area Drainage Calculations

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-------	-------	19.08	-------	-------	33.00	-------	-------	50.76	Area A
2	SCS Runoff	-------	-------	14.57	-------	-------	25.20	-------	-------	38.76	Area B
3	Combine	1, 2	-------	33.66	-------	-------	58.19	-------	-------	89.52	Outlet to Dominguez Channel

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	50.76	1	596	239,078	----	------	------	Area A
2	SCS Runoff	38.76	1	596	182,590	----	------	------	Area B
3	Combine	89.52	1	596	421,667	1, 2	------	------	Outlet to Dominguez Channel

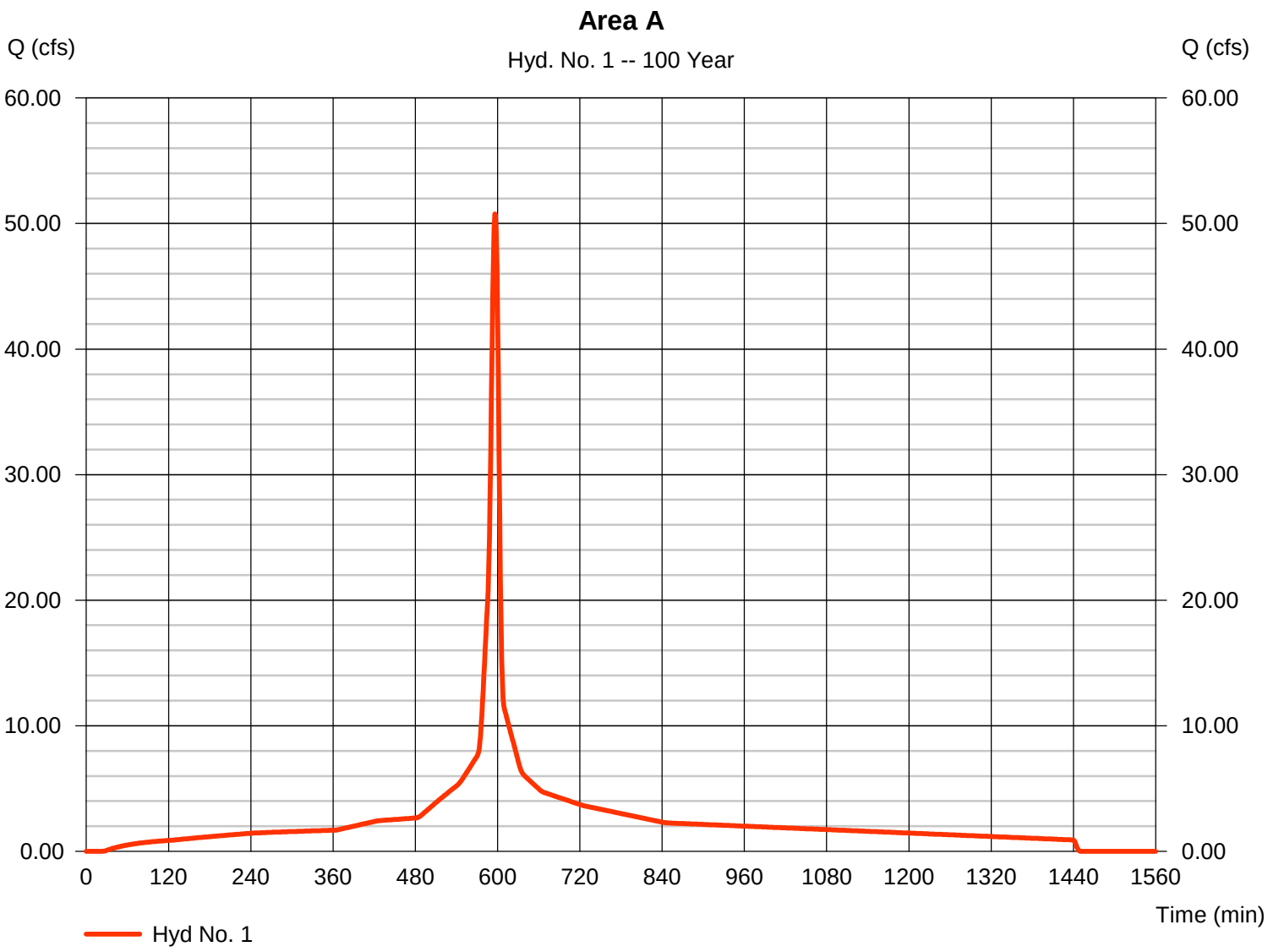
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Dec 29, 2009

Hyd. No. 1

Area A

Hydrograph type	=	SCS Runoff	Peak discharge	=	50.76 cfs
Storm frequency	=	100 yrs	Time to peak	=	596 min
Time interval	=	1 min	Hyd. volume	=	239,078 cuft
Drainage area	=	10.200 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	6.50 in	Distribution	=	Type I
Storm duration	=	24 hrs	Shape factor	=	484



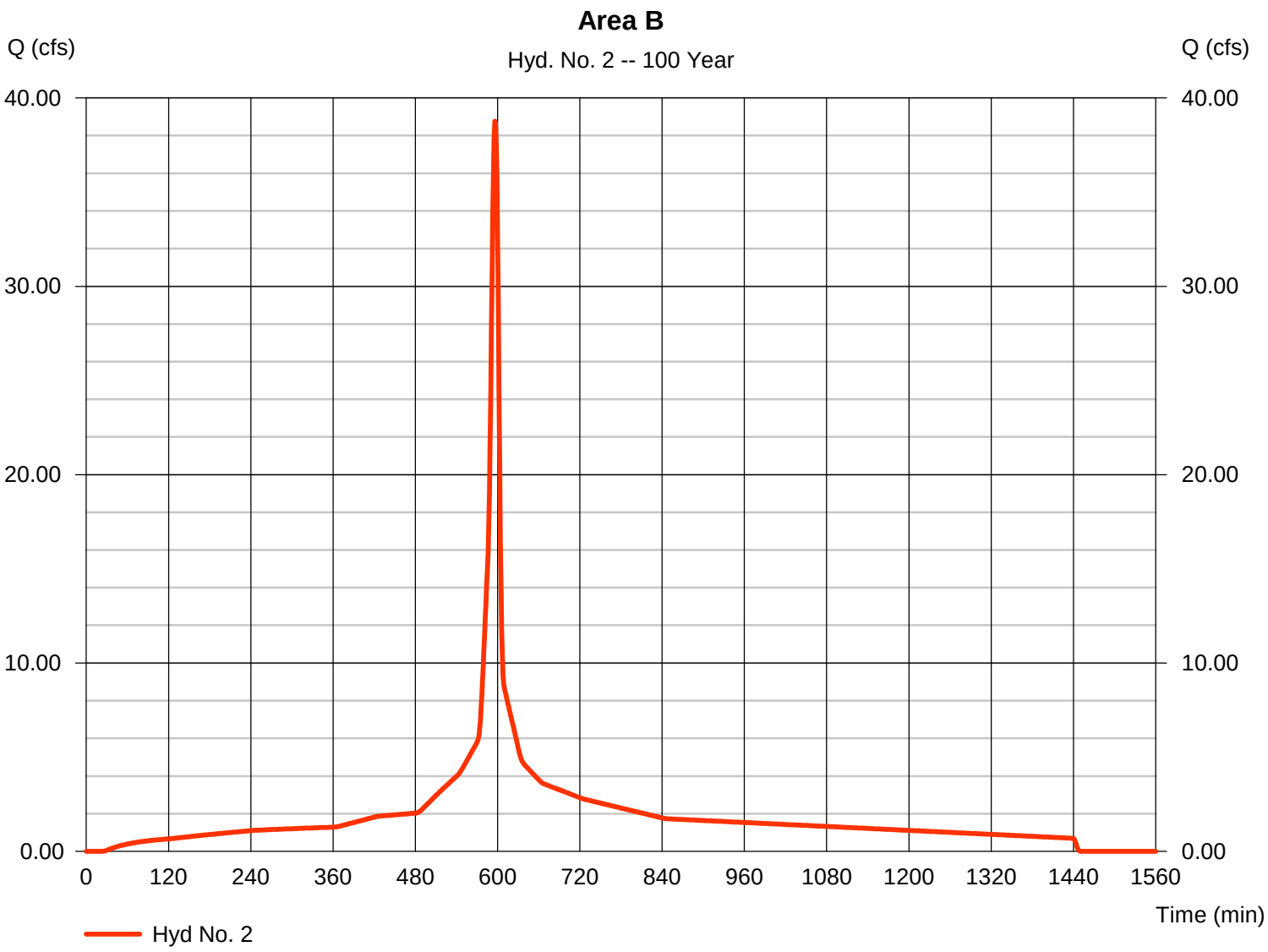
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Dec 29, 2009

Hyd. No. 2

Area B

Hydrograph type	=	SCS Runoff	Peak discharge	=	38.76 cfs
Storm frequency	=	100 yrs	Time to peak	=	596 min
Time interval	=	1 min	Hyd. volume	=	182,590 cuft
Drainage area	=	7.790 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	6.50 in	Distribution	=	Type I
Storm duration	=	24 hrs	Shape factor	=	484



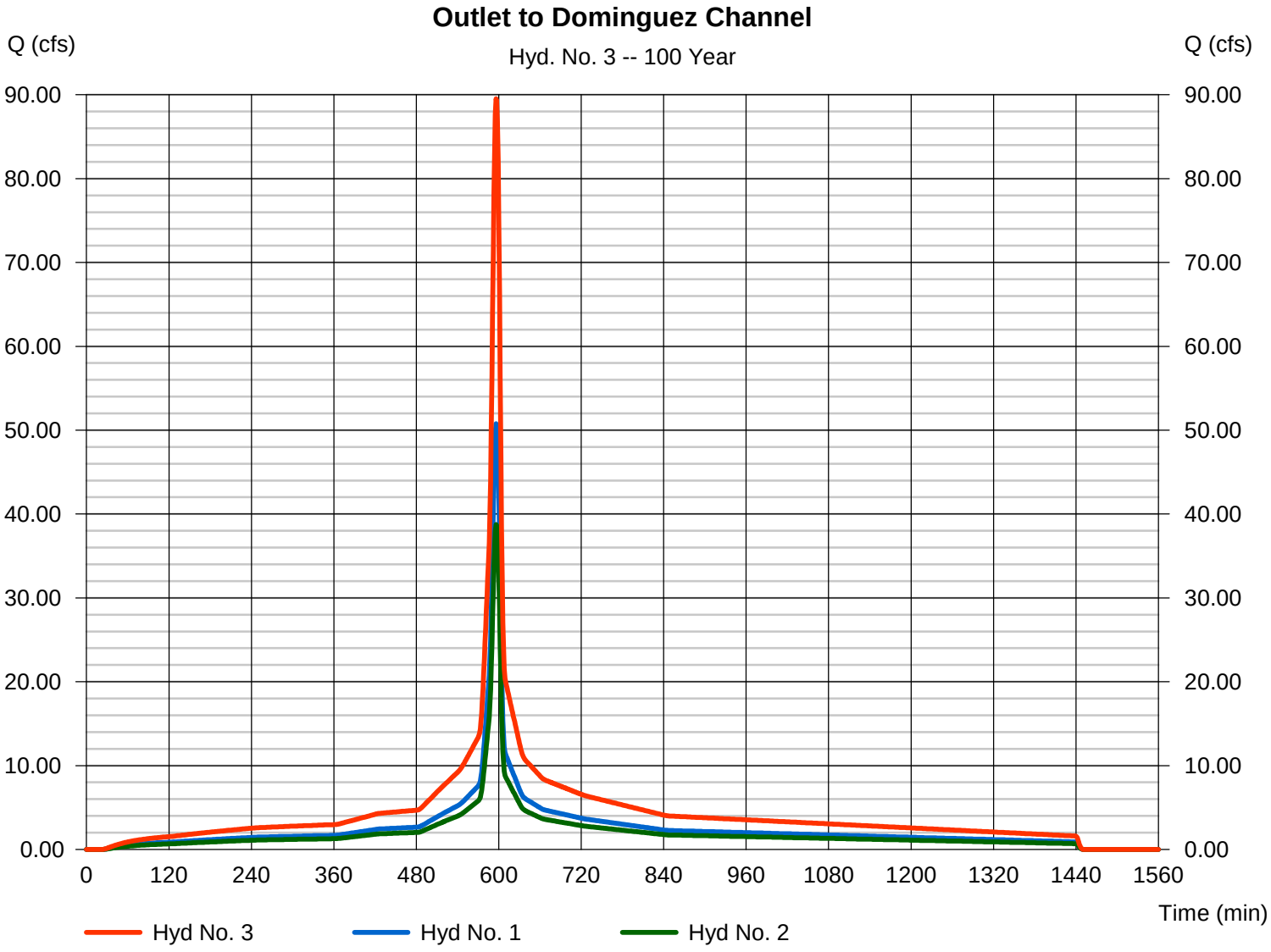
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Dec 29, 2009

Hyd. No. 3

Outlet to Dominguez Channel

Hydrograph type	= Combine	Peak discharge	= 89.52 cfs
Storm frequency	= 100 yrs	Time to peak	= 596 min
Time interval	= 1 min	Hyd. volume	= 421,667 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 17.990 ac



Post-Development
Project Site Drainage Calculations

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-------	-------	-------	-------	-------	-------	-------	-------	1.344	Train 5 Inlet 1
2	SCS Runoff	-------	-------	-------	-------	-------	-------	-------	-------	1.344	Train 5 Inlet 2
3	SCS Runoff	-------	-------	-------	-------	-------	-------	-------	-------	1.443	Train 5 Inlet 3
4	SCS Runoff	-------	-------	-------	-------	-------	-------	-------	-------	0.995	Train 5 Inlet 9
5	SCS Runoff	-------	-------	-------	-------	-------	-------	-------	-------	1.493	Train 5 Inlet 5
6	SCS Runoff	-------	-------	-------	-------	-------	-------	-------	-------	0.995	Train 5 Inlet 6
7	SCS Runoff	-------	-------	-------	-------	-------	-------	-------	-------	0.896	Train 5 Inlet 7
8	SCS Runoff	-------	-------	-------	-------	-------	-------	-------	-------	0.597	Train 5 Inlet 8
9	SCS Runoff	-------	-------	-------	-------	-------	-------	-------	-------	2.737	Exist DB to SWS
10	Combine	1, 2, 3, 7,	-------	-------	-------	-------	-------	-------	-------	5.026	To MH 4
11	Combine	4, 5, 6, 8, 10	-------	-------	-------	-------	-------	-------	-------	9.106	To Oily Water System
12	Combine	9, 11	-------	-------	-------	-------	-------	-------	-------	11.84	Total Runoff of Fifth Train

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	1.344	1	596	6,329	----	------	------	Train 5 Inlet 1
2	SCS Runoff	1.344	1	596	6,329	----	------	------	Train 5 Inlet 2
3	SCS Runoff	1.443	1	596	6,797	----	------	------	Train 5 Inlet 3
4	SCS Runoff	0.995	1	596	4,688	----	------	------	Train 5 Inlet 9
5	SCS Runoff	1.493	1	596	7,032	----	------	------	Train 5 Inlet 5
6	SCS Runoff	0.995	1	596	4,688	----	------	------	Train 5 Inlet 6
7	SCS Runoff	0.896	1	596	4,219	----	------	------	Train 5 Inlet 7
8	SCS Runoff	0.597	1	596	2,813	----	------	------	Train 5 Inlet 8
9	SCS Runoff	2.737	1	596	12,891	----	------	------	Exist DB to SWS
10	Combine	5.026	1	596	23,673	1, 2, 3, 7,	------	------	To MH 4
11	Combine	9.106	1	596	42,893	4, 5, 6, 8, 10	------	------	To Oily Water System
12	Combine	11.84	1	596	55,785	9, 11	------	------	Total Runoff of Fifth Train

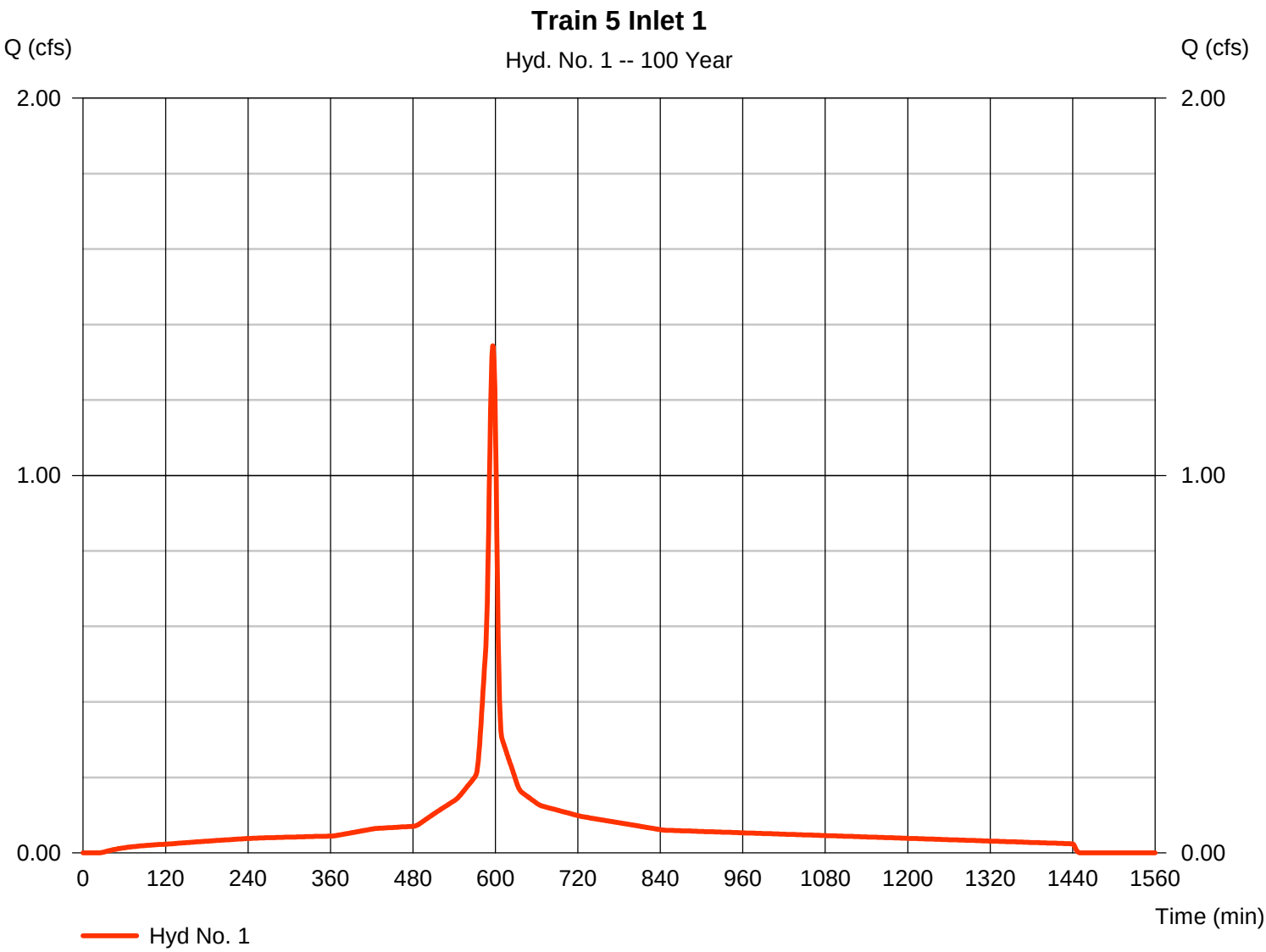
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Monday, Dec 21, 2009

Hyd. No. 1

Train 5 Inlet 1

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.344 cfs
Storm frequency	=	100 yrs	Time to peak	=	596 min
Time interval	=	1 min	Hyd. volume	=	6,329 cuft
Drainage area	=	0.270 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	6.50 in	Distribution	=	Type I
Storm duration	=	24 hrs	Shape factor	=	484



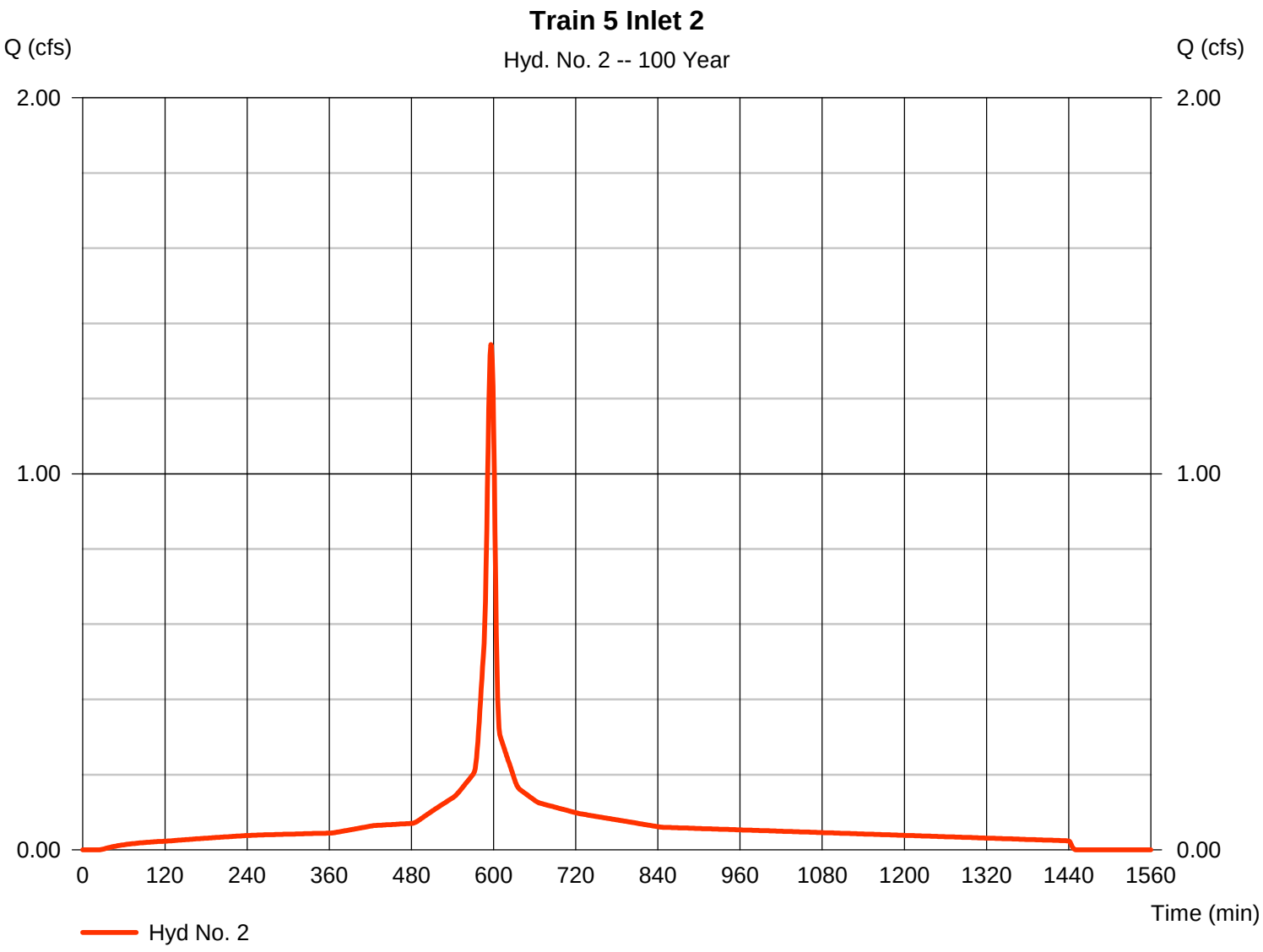
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Monday, Dec 21, 2009

Hyd. No. 2

Train 5 Inlet 2

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.344 cfs
Storm frequency	=	100 yrs	Time to peak	=	596 min
Time interval	=	1 min	Hyd. volume	=	6,329 cuft
Drainage area	=	0.270 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	6.50 in	Distribution	=	Type I
Storm duration	=	24 hrs	Shape factor	=	484



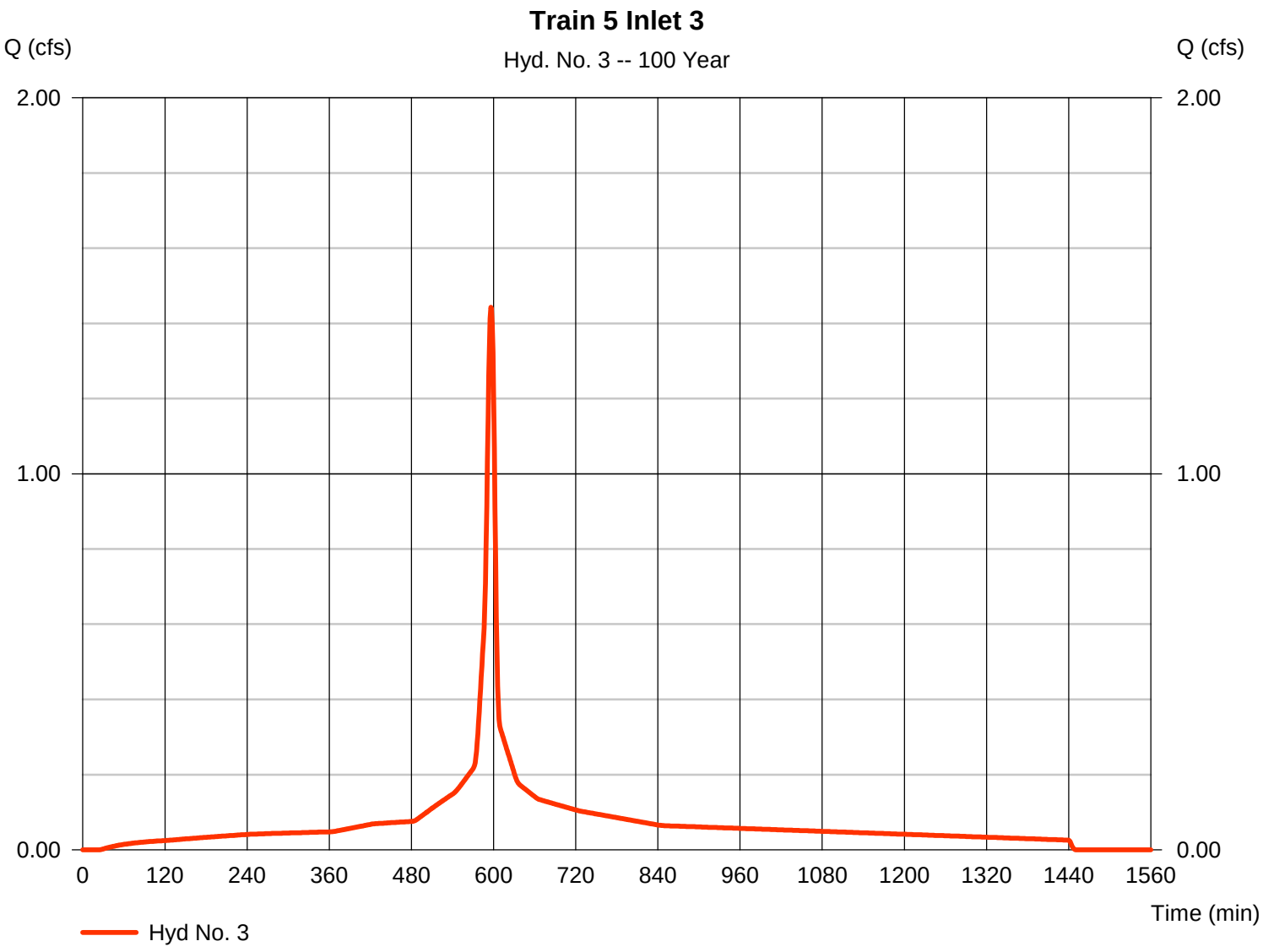
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Monday, Dec 21, 2009

Hyd. No. 3

Train 5 Inlet 3

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.443 cfs
Storm frequency	=	100 yrs	Time to peak	=	596 min
Time interval	=	1 min	Hyd. volume	=	6,797 cuft
Drainage area	=	0.290 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	6.50 in	Distribution	=	Type I
Storm duration	=	24 hrs	Shape factor	=	484



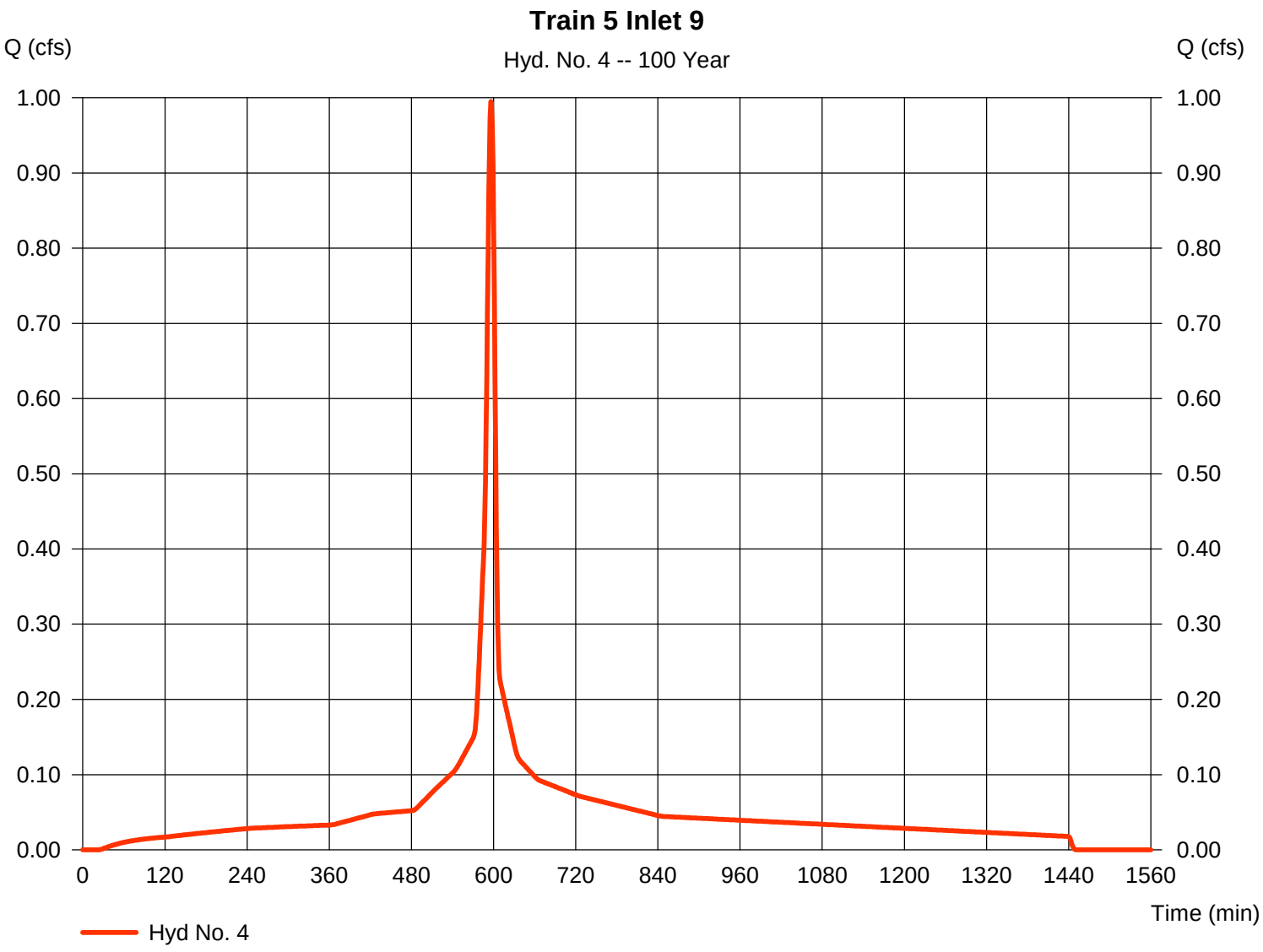
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Monday, Dec 21, 2009

Hyd. No. 4

Train 5 Inlet 9

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.995 cfs
Storm frequency	=	100 yrs	Time to peak	=	596 min
Time interval	=	1 min	Hyd. volume	=	4,688 cuft
Drainage area	=	0.200 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	6.50 in	Distribution	=	Type I
Storm duration	=	24 hrs	Shape factor	=	484



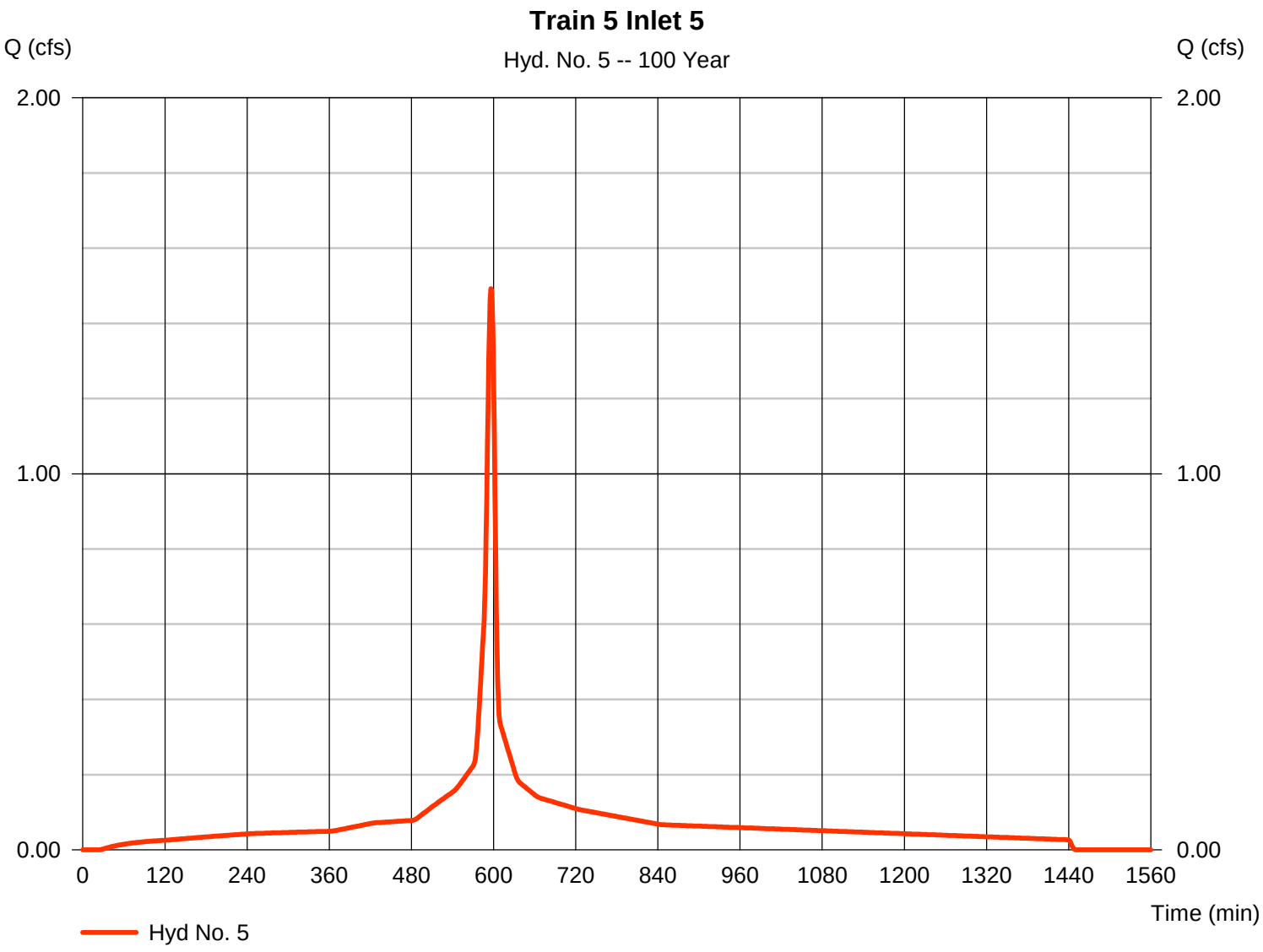
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Monday, Dec 21, 2009

Hyd. No. 5

Train 5 Inlet 5

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.493 cfs
Storm frequency	=	100 yrs	Time to peak	=	596 min
Time interval	=	1 min	Hyd. volume	=	7,032 cuft
Drainage area	=	0.300 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	6.50 in	Distribution	=	Type I
Storm duration	=	24 hrs	Shape factor	=	484



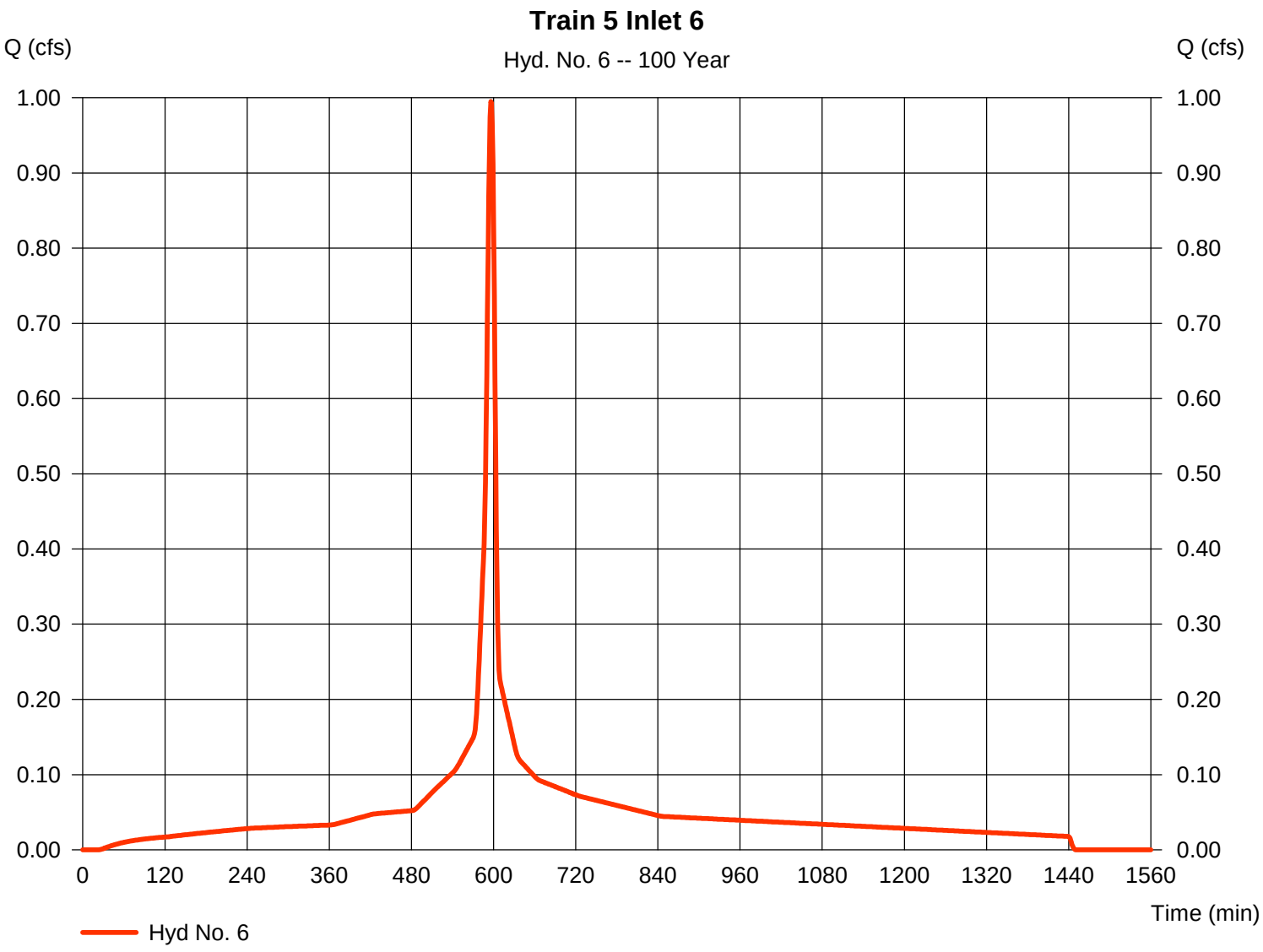
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Monday, Dec 21, 2009

Hyd. No. 6

Train 5 Inlet 6

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.995 cfs
Storm frequency	=	100 yrs	Time to peak	=	596 min
Time interval	=	1 min	Hyd. volume	=	4,688 cuft
Drainage area	=	0.200 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	6.50 in	Distribution	=	Type I
Storm duration	=	24 hrs	Shape factor	=	484



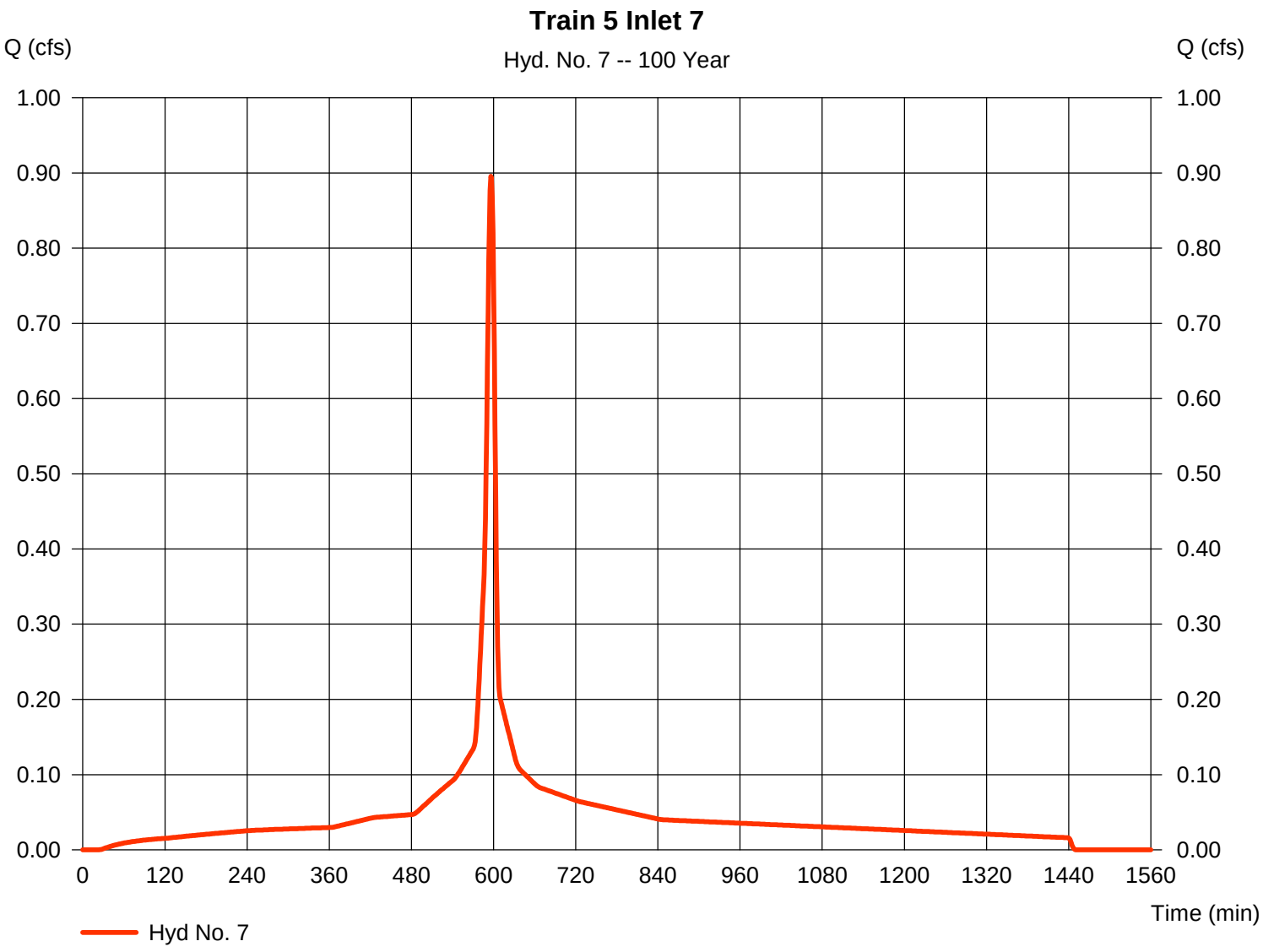
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Monday, Dec 21, 2009

Hyd. No. 7

Train 5 Inlet 7

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.896 cfs
Storm frequency	=	100 yrs	Time to peak	=	596 min
Time interval	=	1 min	Hyd. volume	=	4,219 cuft
Drainage area	=	0.180 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	6.50 in	Distribution	=	Type I
Storm duration	=	24 hrs	Shape factor	=	484



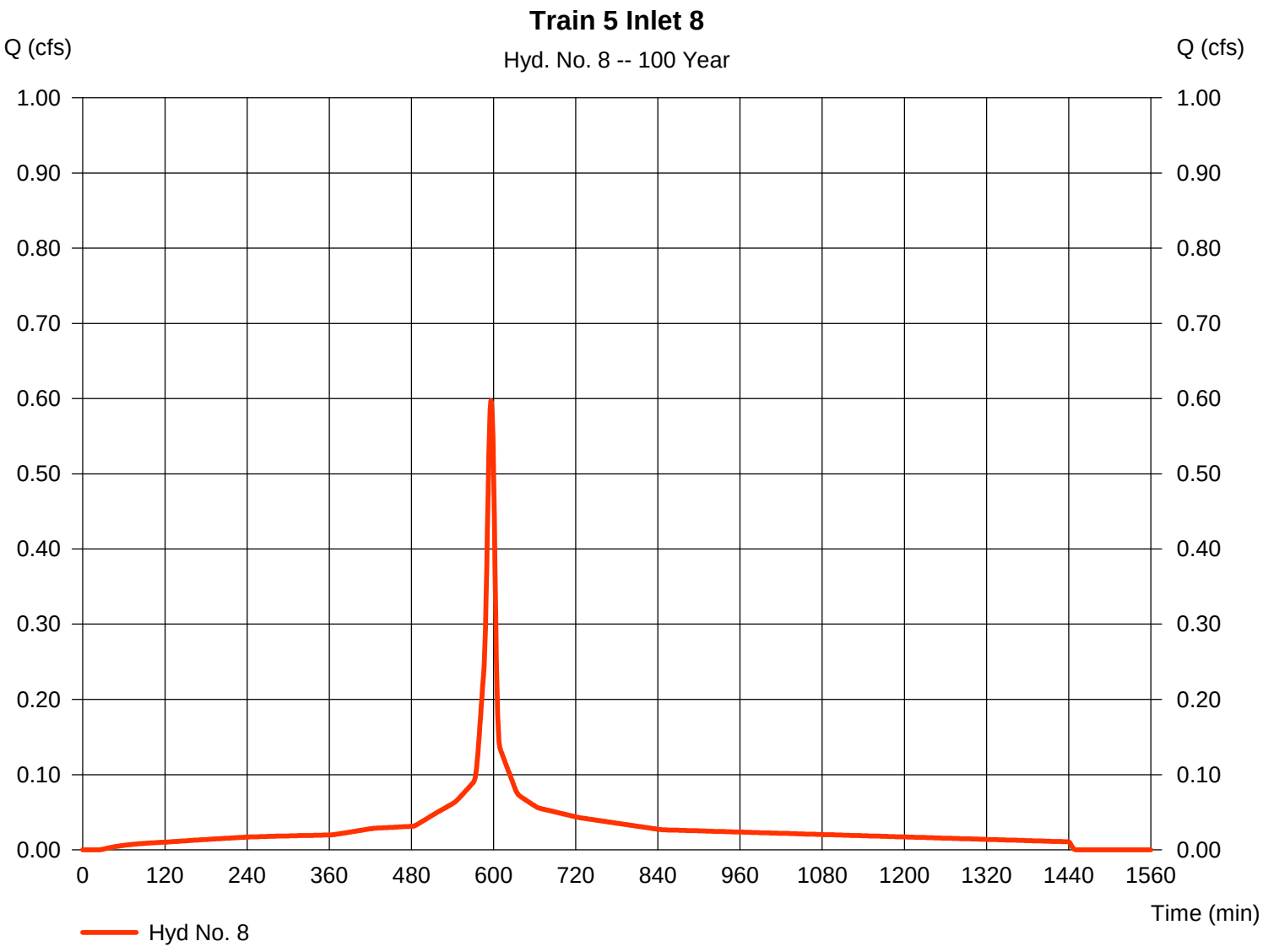
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Monday, Dec 21, 2009

Hyd. No. 8

Train 5 Inlet 8

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.597 cfs
Storm frequency	=	100 yrs	Time to peak	=	596 min
Time interval	=	1 min	Hyd. volume	=	2,813 cuft
Drainage area	=	0.120 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	6.50 in	Distribution	=	Type I
Storm duration	=	24 hrs	Shape factor	=	484



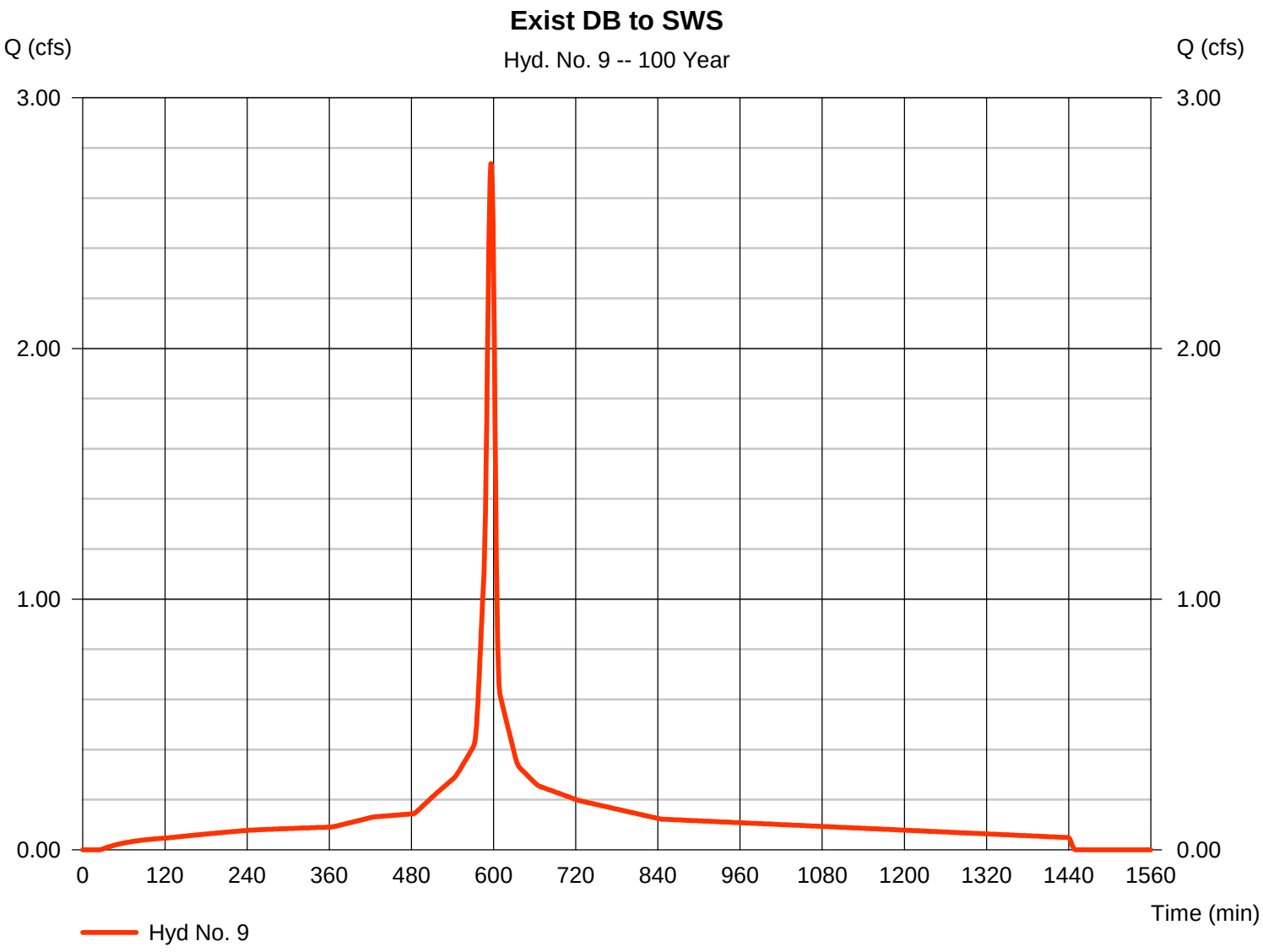
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Monday, Dec 21, 2009

Hyd. No. 9

Exist DB to SWS

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.737 cfs
Storm frequency	=	100 yrs	Time to peak	=	596 min
Time interval	=	1 min	Hyd. volume	=	12,891 cuft
Drainage area	=	0.550 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	6.50 in	Distribution	=	Type I
Storm duration	=	24 hrs	Shape factor	=	484



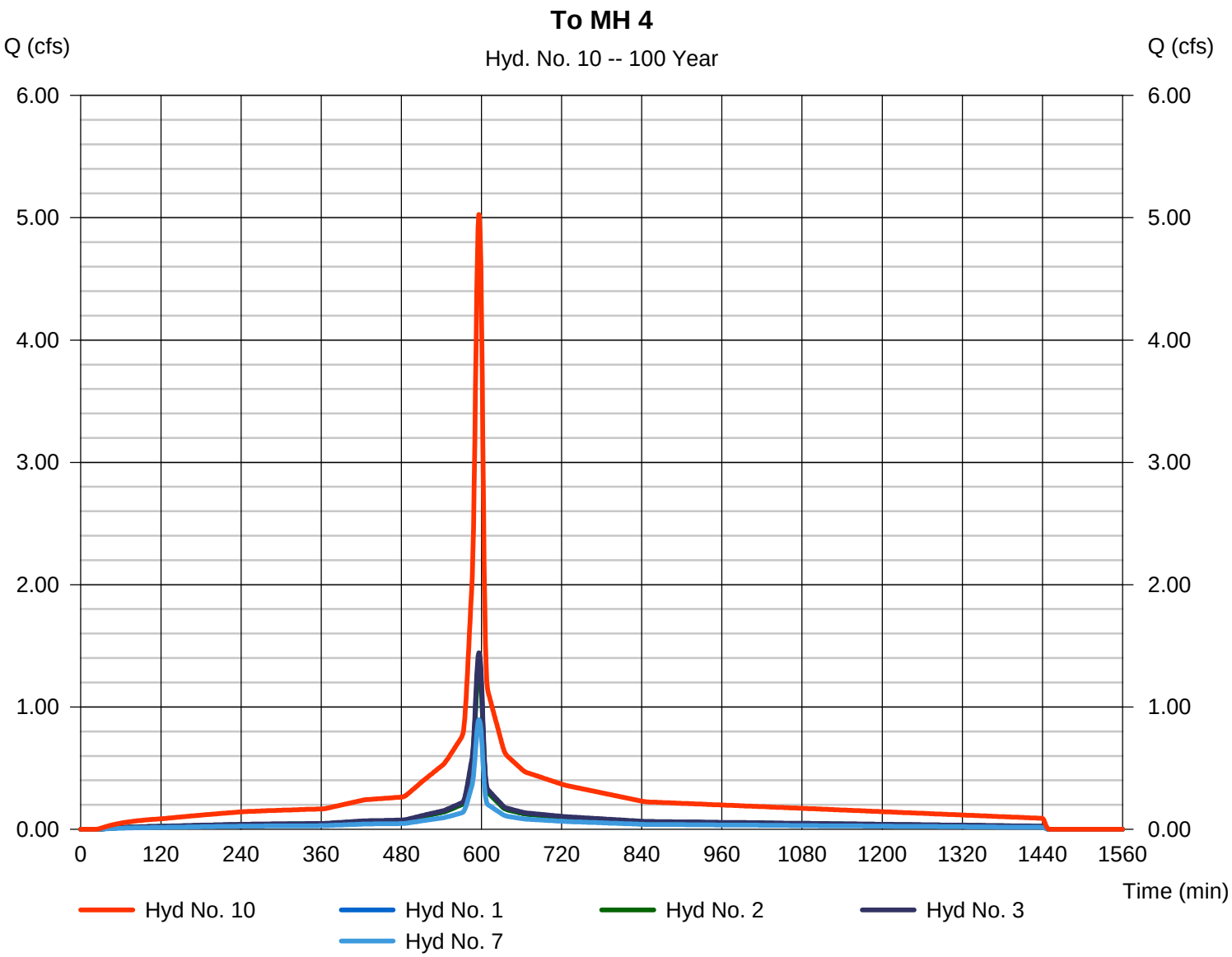
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Monday, Dec 21, 2009

Hyd. No. 10

To MH 4

Hydrograph type	= Combine	Peak discharge	= 5.026 cfs
Storm frequency	= 100 yrs	Time to peak	= 596 min
Time interval	= 1 min	Hyd. volume	= 23,673 cuft
Inflow hyds.	= 1, 2, 3, 7	Contrib. drain. area	= 1.010 ac



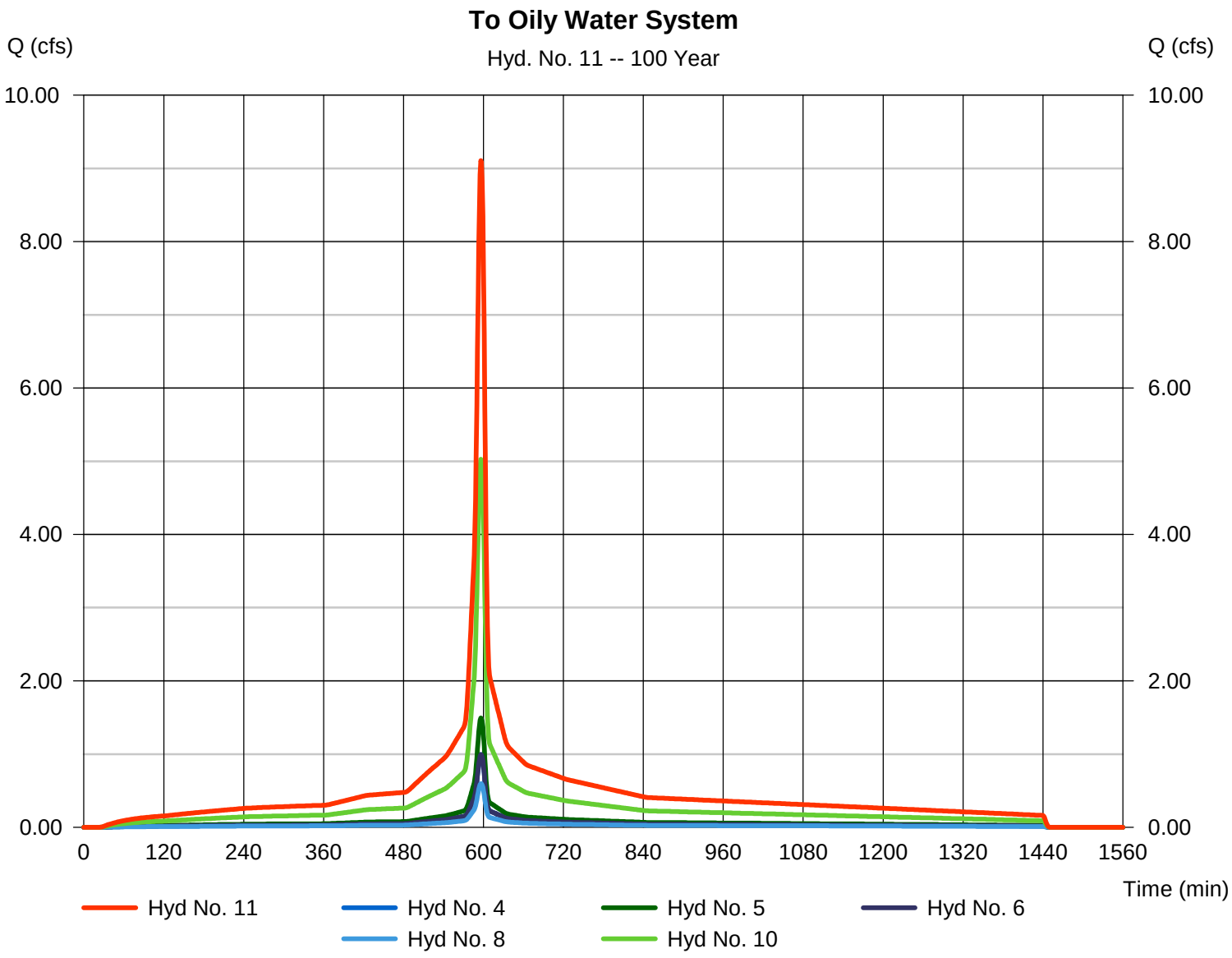
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Monday, Dec 21, 2009

Hyd. No. 11

To Oily Water System

Hydrograph type	= Combine	Peak discharge	= 9.106 cfs
Storm frequency	= 100 yrs	Time to peak	= 596 min
Time interval	= 1 min	Hyd. volume	= 42,893 cuft
Inflow hyds.	= 4, 5, 6, 8, 10	Contrib. drain. area	= 0.820 ac



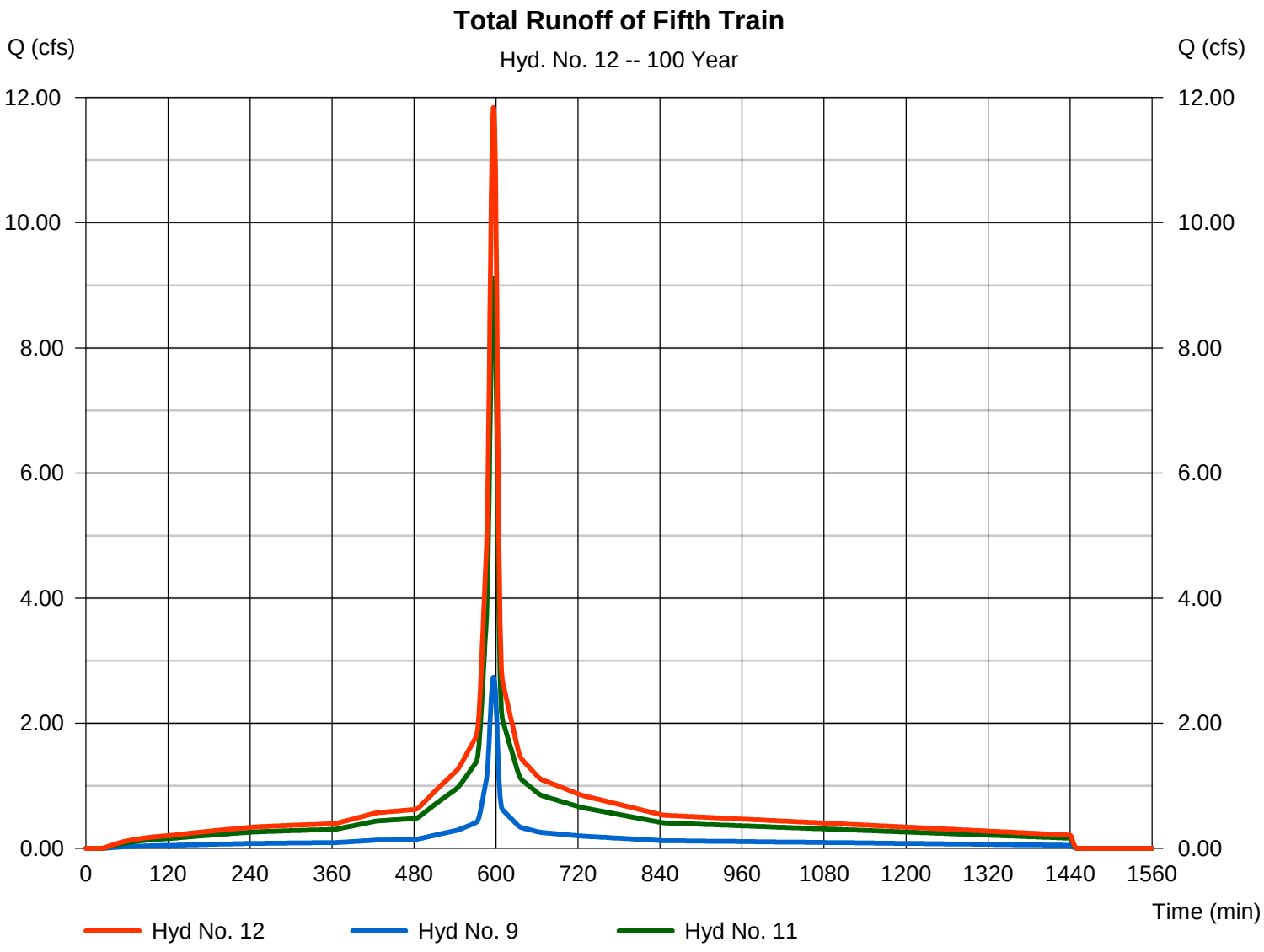
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Monday, Dec 21, 2009

Hyd. No. 12

Total Runoff of Fifth Train

Hydrograph type	= Combine	Peak discharge	= 11.84 cfs
Storm frequency	= 100 yrs	Time to peak	= 596 min
Time interval	= 1 min	Hyd. volume	= 55,785 cuft
Inflow hyds.	= 9, 11	Contrib. drain. area	= 0.550 ac



Post-Development

Construction Laydown and Parking Area Drainage Calculations

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-------	-------	19.08	-------	-------	33.00	-------	-------	50.76	Area A
2	SCS Runoff	-------	-------	14.57	-------	-------	25.20	-------	-------	38.76	Area B
3	Combine	1, 2	-------	33.66	-------	-------	58.19	-------	-------	89.52	Outlet to Dominguez Channel

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	50.76	1	596	239,078	----	------	------	Area A
2	SCS Runoff	38.76	1	596	182,590	----	------	------	Area B
3	Combine	89.52	1	596	421,667	1, 2	------	------	Outlet to Dominguez Channel

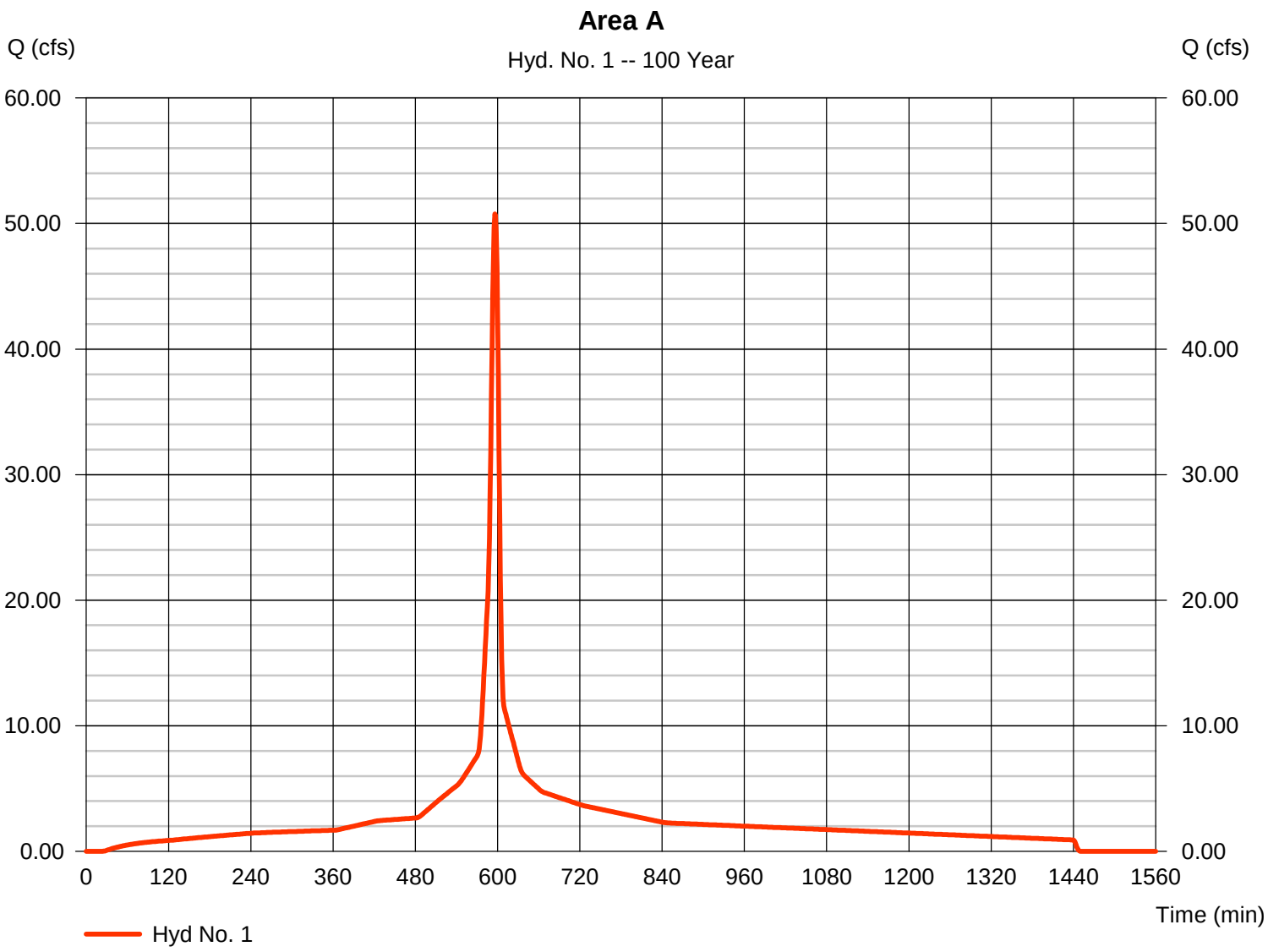
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Dec 29, 2009

Hyd. No. 1

Area A

Hydrograph type	=	SCS Runoff	Peak discharge	=	50.76 cfs
Storm frequency	=	100 yrs	Time to peak	=	596 min
Time interval	=	1 min	Hyd. volume	=	239,078 cuft
Drainage area	=	10.200 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	6.50 in	Distribution	=	Type I
Storm duration	=	24 hrs	Shape factor	=	484



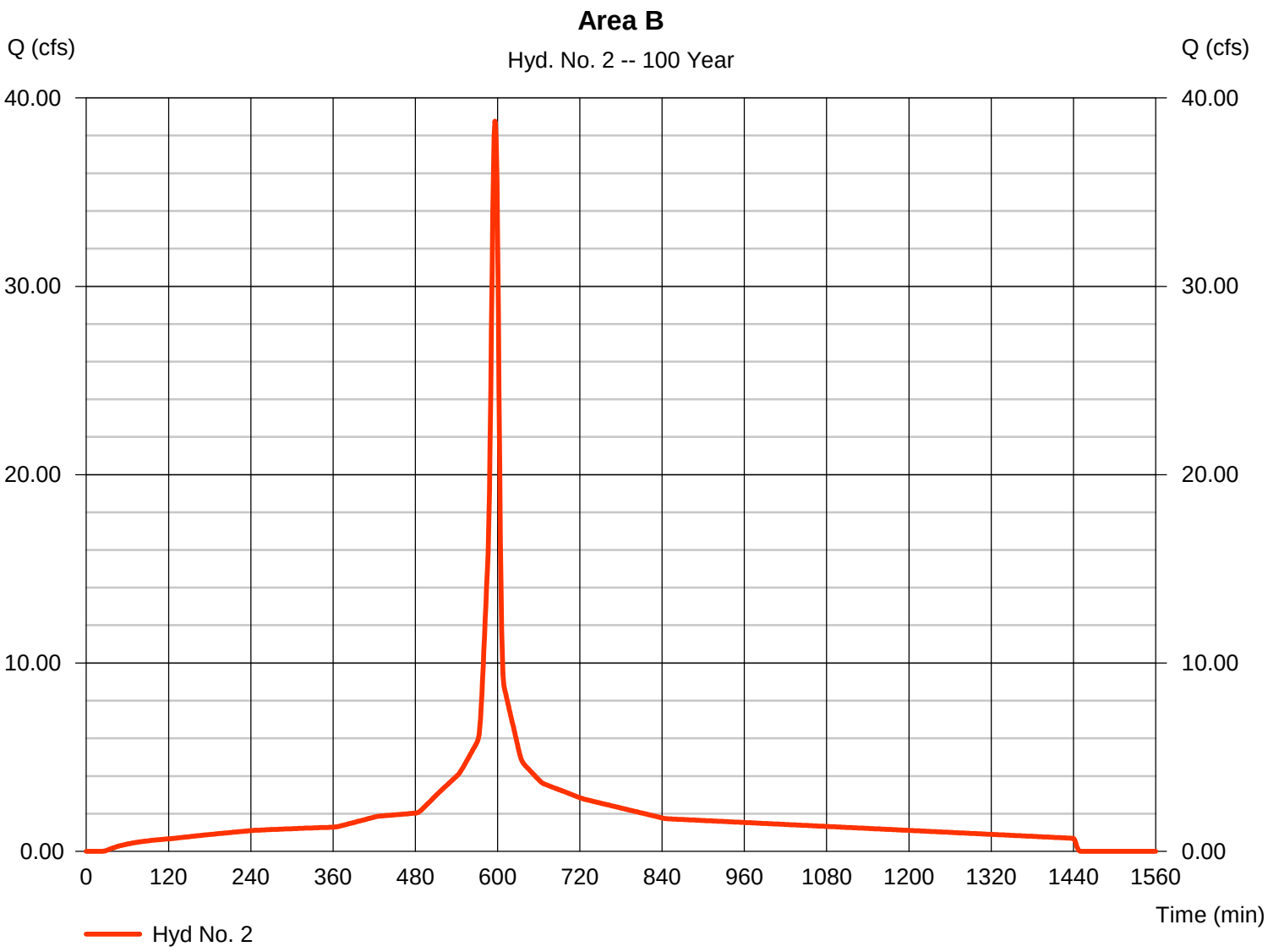
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Dec 29, 2009

Hyd. No. 2

Area B

Hydrograph type	=	SCS Runoff	Peak discharge	=	38.76 cfs
Storm frequency	=	100 yrs	Time to peak	=	596 min
Time interval	=	1 min	Hyd. volume	=	182,590 cuft
Drainage area	=	7.790 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	6.50 in	Distribution	=	Type I
Storm duration	=	24 hrs	Shape factor	=	484



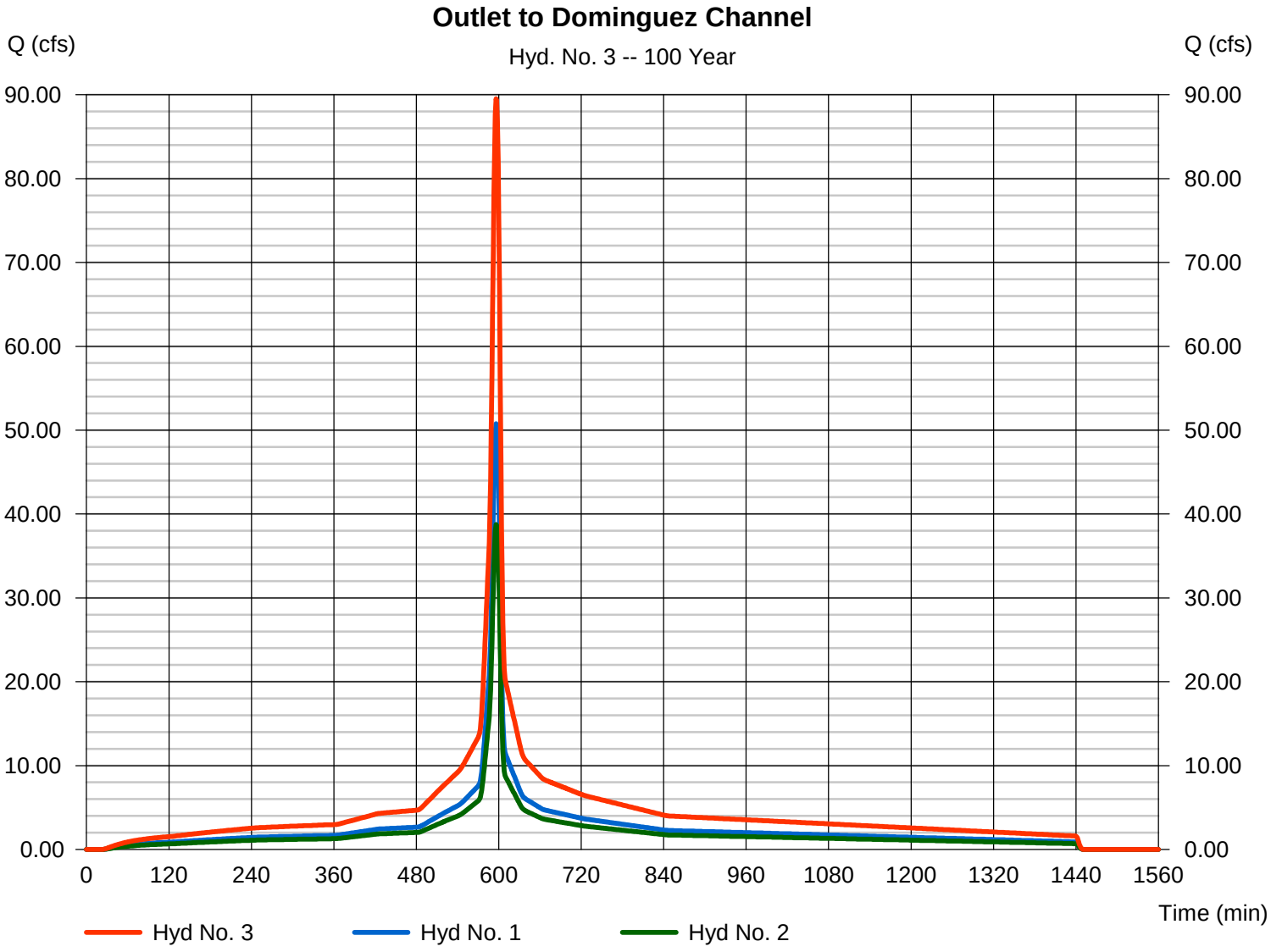
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Dec 29, 2009

Hyd. No. 3

Outlet to Dominguez Channel

Hydrograph type	= Combine	Peak discharge	= 89.52 cfs
Storm frequency	= 100 yrs	Time to peak	= 596 min
Time interval	= 1 min	Hyd. volume	= 421,667 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 17.990 ac



Hydraflow Rainfall Report

Hydraflow Hydrographs by Intelisolve v9.23 Friday, Dec 18, 2009

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	30.4090	7.8000	0.7767	--------
3	0.0000	0.0000	0.0000	--------
5	38.5803	9.4000	0.7662	--------
10	45.0218	10.3000	0.7653	--------
25	54.7679	11.3000	0.7669	--------
50	62.0315	11.8000	0.7670	--------
100	70.2241	12.4000	0.7697	--------

File name: brayton.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	4.20	3.25	2.68	2.30	2.02	1.81	1.64	1.51	1.40	1.30	1.22	1.15
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	5.00	3.98	3.34	2.89	2.56	2.31	2.11	1.94	1.81	1.69	1.59	1.50
10	5.58	4.50	3.80	3.31	2.94	2.66	2.43	2.25	2.09	1.95	1.84	1.74
25	6.44	5.24	4.46	3.90	3.48	3.16	2.89	2.67	2.49	2.33	2.20	2.08
50	7.13	5.84	4.98	4.37	3.91	3.54	3.25	3.00	2.80	2.62	2.47	2.34
100	7.79	6.41	5.49	4.83	4.32	3.92	3.60	3.33	3.11	2.92	2.75	2.60

Tc = time in minutes. Values may exceed 60.

Precip. file name: Carson 24 hr 100 yr rain.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	2.50	0.00	0.00	4.25	0.00	0.00	6.50
SCS 6-Hr	0.00	1.50	0.00	0.00	2.35	0.00	0.00	3.30
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX A-2 Revised Storm Water Runoff Calculations

Kiewit Power Engineers developed storm water calculations to determine the predevelopment and post-development peak discharge for the BP Watson Cogeneration facility (the Project plus the existing facility).

Predevelopment conditions were established based on site visits and available documents; the exact location and dimensions of the existing storm water system were not available at the time of this study. Additional documents were discovered after the response to Data Request #28 was submitted. These documents have been utilized to update the storm water calculations. Features depicted on Figure A-1 are an approximation of current site storm water management conditions.

The addition of the Project (fifth train) is expected to slightly increase the current (predevelopment) storm water conditions. The site was previously thought to be graveled (as noted in the response to Data Request # 28) but is now believed to be both paved and graveled. The predevelopment runoff coefficient has been increased from 85 to 95 to reflect the change.

Existing runoff from the site is conveyed to the storm water system (also referred to as the "Clean Water System" in Sections 3 and 5.5 of the AFC), which consists of area inlets and storm water pipes. This system ultimately drains to the Dominguez Channel. After construction, runoff from the Project (fifth train) will be directed to the oily water system at the BP Refinery for treatment (see Figure A-2) prior to discharge to the Los Angeles County Sanitation Districts (LACSD) wastewater treatment plant. The oily water system at the proposed point of discharge consists of a 24–inch diameter pipe with an expected capacity of 34 cubic feet per second (cfs), which is adequate to handle its current demand plus the additional 9.1 cfs from the proposed fifth train. Discharge locations for areas outside the proposed fifth train will remain unchanged.

Quality requirements for storm water will be addressed by using an existing oil/water separator and by installing Best Management Practices (BMP) measures during construction.

Predevelopment peak discharge for the entire BP Watson Cogeneration facility (trains 1 through 4, plus the area of the proposed fifth train) to the storm water system is 68.59 cfs and 105.75 cfs for the 10-year and 100-year events, respectively. These values correspond to 21.72 acres which were subdivided into drainage areas according to Figure A-1. The runoff volume for predevelopment is 319,647 cubic feet (cf) and 500,065 (cf) for the 10-year and 100-year events, respectively. Figure A-1 shows areas 1 and 8 as the proposed fifth train.

Post-development peak discharge to the storm water system will decrease due to 1.81 acres (fifth train) being directed to the oily water system. Peak discharge to the storm water system is projected to be 64.47 cfs and 99.17 cfs for the 10-year and 100-year events, respectively. The runoff volume to the storm water system is 299,511 cf and 467,139 cf for the 10-year and 100-year events, respectively. Peak discharge to the oily water system is 5.92 cfs and 9.106 cfs for the 10-year and 100-year events, respectively. The runoff volume to the oily water system is 27,502 cf and 42,893 cf for the 10-year and 100-year events, respectively. Figure A-2 shows areas 1 and 8 replaced with a system of pipes connecting to the oily water system.

Predevelopment and Post-Development Storm Water Results

	Area (ac)	Runoff Coefficient	10-year Discharge (cfs)	100-year Discharge (cfs)	10-Year Volume (cf)	100-Year Volume (cf)
Predevelopment to Storm Water System	21.72	98(Trains 1-4)-95(Fifth Train)	68.59	105.75	319,647	500,065
Predevelopment to Oily Water System	0	-	0	0	0	0
Post-development to Storm Water System	19.91	98	64.47	99.17	299,511	467,139
Post-development to Oily Water System	1.81	98	5.92	9.106	27,502	42,893

Source: Kiewit Power Engineers, Co., 2009.
Notes:
ac = acre
cfs = cubic feet per second
cf = cubic feet

Calculations from Hydraflow Software are attached with Figures A-1 and A-2 showing the sub-areas and size.

Description of Hydraflow Summary Report Terms

Term	**Description**
SCS Runoff	SCS method was used to calculate hydrograph
Combine	Hydrographs added to route through site to the outlet
Peak Flow	Peak Discharge
Hyd. Volume	Runoff Volume
Inflow Hyd(s)	Individual hydrographs added to create a new hydrograph

Source: Kiewit Power Engineers, Co., 2009.
Notes:
Hyd = hydrograph
SCS = Soil Conservation Service

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	4.048	1	596	18,035	----	------	------	Area 1
2	SCS Runoff	3.655	1	596	16,982	----	------	------	Area 2
3	SCS Runoff	3.688	1	596	17,132	----	------	------	Area 3
4	SCS Runoff	3.688	1	596	17,132	----	------	------	Area 4
5	SCS Runoff	3.688	1	596	17,132	----	------	------	Area 5
6	SCS Runoff	4.949	1	596	22,993	----	------	------	Area 6
7	SCS Runoff	4.496	1	596	20,889	----	------	------	Area 7
8	SCS Runoff	3.245	1	596	14,456	----	------	------	Area 8
9	SCS Runoff	3.494	1	596	16,230	----	------	------	Area 9
10	SCS Runoff	3.494	1	596	16,230	----	------	------	Area 10
11	SCS Runoff	3.494	1	596	16,230	----	------	------	Area 11
12	SCS Runoff	3.364	1	596	15,629	----	------	------	Area 12
13	SCS Runoff	4.852	1	596	22,542	----	------	------	Area 13
14	SCS Runoff	3.688	1	596	17,132	----	------	------	Area 14
15	SCS Runoff	5.013	1	597	23,870	----	------	------	Area 15
16	SCS Runoff	5.133	1	597	24,439	----	------	------	Area 16
17	SCS Runoff	4.745	1	597	22,591	----	------	------	Area 17
18	Combine	21.43	1	596	98,164	1, 2, 8, 9, 10, 11,	------	------	Southwest Portion
19	Combine	17.50	1	597	82,573	3, 4, 15, 16,	------	------	Northwest Portion
20	Combine	25.04	1	596	116,318	5, 6, 7, 12, 13, 14,	----	------	East Portion
21	Combine	68.59	1	597	319,647	17, 18, 19, 20	------	------	To Dominguez Channel

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	6.375	1	596	28,974	----	------	------	Area 1
2	SCS Runoff	5.623	1	596	26,486	----	------	------	Area 2
3	SCS Runoff	5.673	1	596	26,720	----	------	------	Area 3
4	SCS Runoff	5.673	1	596	26,720	----	------	------	Area 4
5	SCS Runoff	5.673	1	596	26,720	----	------	------	Area 5
6	SCS Runoff	7.613	1	596	35,862	----	------	------	Area 6
7	SCS Runoff	6.917	1	596	32,580	----	------	------	Area 7
8	SCS Runoff	5.109	1	596	23,224	----	------	------	Area 8
9	SCS Runoff	5.374	1	596	25,314	----	------	------	Area 9
10	SCS Runoff	5.374	1	596	25,314	----	------	------	Area 10
11	SCS Runoff	5.374	1	596	25,314	----	------	------	Area 11
12	SCS Runoff	5.175	1	596	24,377	----	------	------	Area 12
13	SCS Runoff	7.464	1	596	35,158	----	------	------	Area 13
14	SCS Runoff	5.673	1	596	26,720	----	------	------	Area 14
15	SCS Runoff	7.712	1	597	37,230	----	------	------	Area 15
16	SCS Runoff	7.895	1	597	38,116	----	------	------	Area 16
17	SCS Runoff	7.299	1	597	35,235	----	------	------	Area 17
18	Combine	33.23	1	596	154,627	1, 2, 8, 9, 10, 11,	------	------	Southwest Portion
19	Combine	26.92	1	597	128,787	3, 4, 15, 16,	------	------	Northwest Portion
20	Combine	38.52	1	596	181,418	5, 6, 7, 12, 13, 14,	------	------	East Portion
21	Combine	105.75	1	597	500,065	17, 18, 19, 20	------	------	To Dominguez Channel

Hydrograph Summary Report

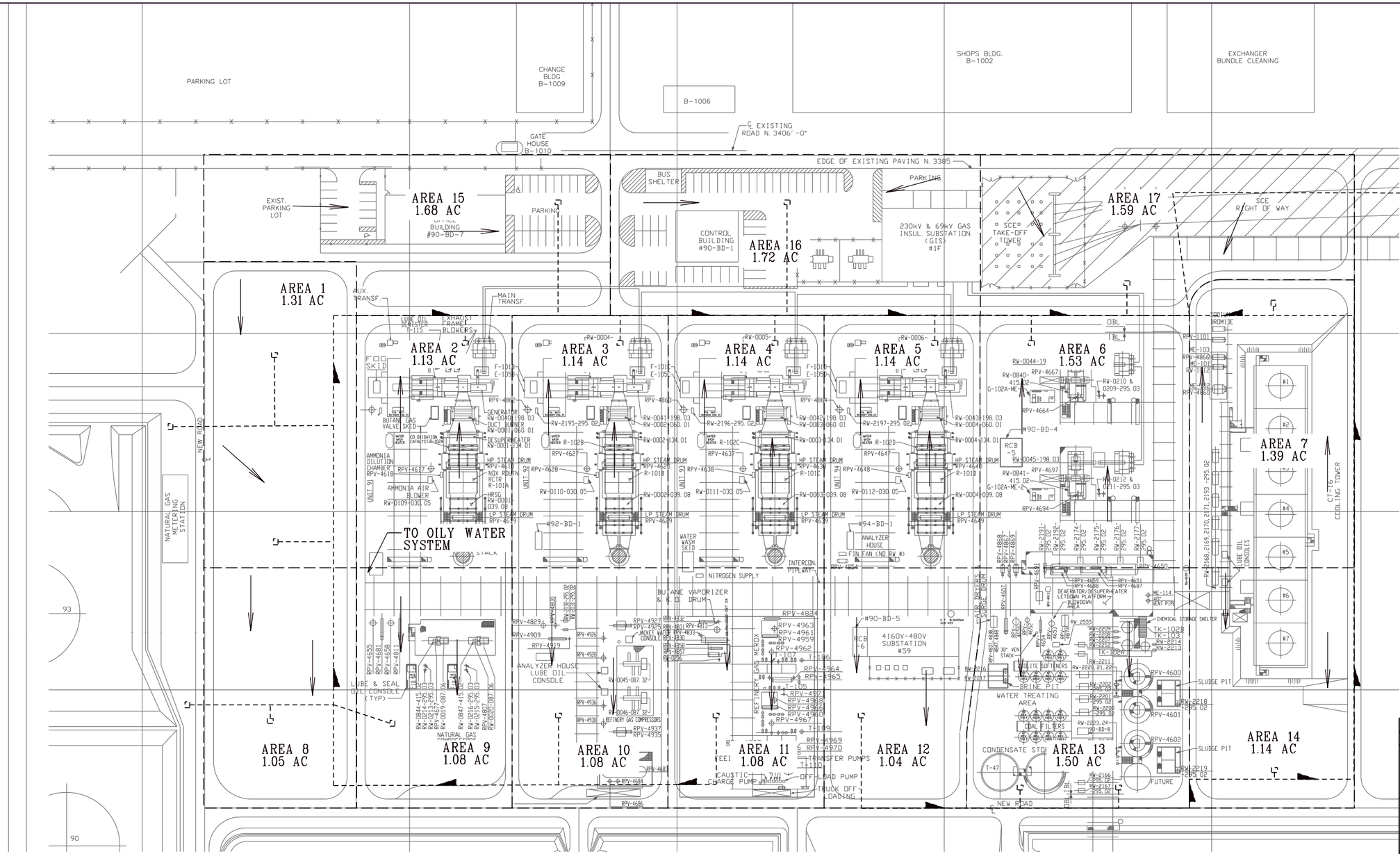
Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.873	1	596	4,058	----	------	------	Train 5 Inlet 1
2	SCS Runoff	0.873	1	596	4,058	----	------	------	Train 5 Inlet 2
3	SCS Runoff	0.938	1	596	4,358	----	------	------	Train 5 Inlet 3
4	SCS Runoff	0.647	1	596	3,006	----	------	------	Train 5 Inlet 9
5	SCS Runoff	0.970	1	596	4,508	----	------	------	Train 5 Inlet 5
6	SCS Runoff	0.647	1	596	3,006	----	------	------	Train 5 Inlet 6
7	SCS Runoff	0.582	1	596	2,705	----	------	------	Train 5 Inlet 7
8	SCS Runoff	0.388	1	596	1,803	----	------	------	Train 5 Inlet 8
9	SCS Runoff	1.779	1	596	8,266	----	------	------	Exist DB to SWS
10	Combine	3.267	1	596	15,178	1, 2, 3, 7,	------	------	To MH 4
11	Combine	5.920	1	596	27,502	4, 5, 6, 8, 10	------	------	To Oily Water System
12	SCS Runoff	3.655	1	596	16,982	----	------	------	Area 2
13	SCS Runoff	3.688	1	596	17,132	----	------	------	Area 3
14	SCS Runoff	3.688	1	596	17,132	----	------	------	Area 4
15	SCS Runoff	3.688	1	596	17,132	----	------	------	Area 5
16	SCS Runoff	4.949	1	596	22,993	----	------	------	Area 6
17	SCS Runoff	4.496	1	596	20,889	----	------	------	Area 7
18	SCS Runoff	3.494	1	596	16,230	----	------	------	Area 9
19	SCS Runoff	3.494	1	596	16,230	----	------	------	Area 10
20	SCS Runoff	3.494	1	596	16,230	----	------	------	Area 11
21	SCS Runoff	3.364	1	596	15,629	----	------	------	Area 12
22	SCS Runoff	4.852	1	596	22,542	----	------	------	Area 13
23	SCS Runoff	3.688	1	596	17,132	----	------	------	Area 14
24	SCS Runoff	5.435	1	596	25,247	----	------	------	Area 15
25	SCS Runoff	5.564	1	596	25,848	----	------	------	Area 16
26	SCS Runoff	5.143	1	596	23,895	----	------	------	Area 17
27	Combine	15.92	1	596	73,939	9, 12, 18, 19, 20,	------	------	Southwest Portion w/o 5th Train
28	Combine	18.37	1	596	85,360	13, 14, 24, 25,	------	------	Northwest Portion
29	Combine	25.04	1	596	116,318	15, 16, 17, 21, 22, 23,	------	------	East Portion
30	Combine	64.47	1	596	299,511	26, 27, 28, 29	------	------	Outlet to Dominguez Channel

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	1.344	1	596	6,329	----	------	------	Train 5 Inlet 1
2	SCS Runoff	1.344	1	596	6,329	----	------	------	Train 5 Inlet 2
3	SCS Runoff	1.443	1	596	6,797	----	------	------	Train 5 Inlet 3
4	SCS Runoff	0.995	1	596	4,688	----	------	------	Train 5 Inlet 9
5	SCS Runoff	1.493	1	596	7,032	----	------	------	Train 5 Inlet 5
6	SCS Runoff	0.995	1	596	4,688	----	------	------	Train 5 Inlet 6
7	SCS Runoff	0.896	1	596	4,219	----	------	------	Train 5 Inlet 7
8	SCS Runoff	0.597	1	596	2,813	----	------	------	Train 5 Inlet 8
9	SCS Runoff	2.737	1	596	12,891	----	------	------	Exist DB to SWS
10	Combine	5.026	1	596	23,673	1, 2, 3, 7,	------	------	To MH 4
11	Combine	9.106	1	596	42,893	4, 5, 6, 8, 10	------	------	To Oily Water System
12	SCS Runoff	5.623	1	596	26,486	----	------	------	Area 2
13	SCS Runoff	5.673	1	596	26,720	----	------	------	Area 3
14	SCS Runoff	5.673	1	596	26,720	----	------	------	Area 4
15	SCS Runoff	5.673	1	596	26,720	----	------	------	Area 5
16	SCS Runoff	7.613	1	596	35,862	----	------	------	Area 6
17	SCS Runoff	6.917	1	596	32,580	----	------	------	Area 7
18	SCS Runoff	5.374	1	596	25,314	----	------	------	Area 9
19	SCS Runoff	5.374	1	596	25,314	----	------	------	Area 10
20	SCS Runoff	5.374	1	596	25,314	----	------	------	Area 11
21	SCS Runoff	5.175	1	596	24,377	----	------	------	Area 12
22	SCS Runoff	7.464	1	596	35,158	----	------	------	Area 13
23	SCS Runoff	5.673	1	596	26,720	----	------	------	Area 14
24	SCS Runoff	8.360	1	596	39,378	----	------	------	Area 15
25	SCS Runoff	8.559	1	596	40,315	----	------	------	Area 16
26	SCS Runoff	7.912	1	596	37,268	----	------	------	Area 17
27	Combine	24.48	1	596	115,320	9, 12, 18, 19, 20,	------	------	Southwest Portion w/o 5th Train
28	Combine	28.26	1	596	133,133	13, 14, 24, 25,	------	------	Northwest Portion
29	Combine	38.52	1	596	181,418	15, 16, 17, 21, 22, 23,	------	------	East Portion
30	Combine	99.17	1	596	467,139	26, 27, 28, 29	------	------	Outlet to Dominguez Channel



EXISTING STORM SEWER

FLOW ARROW

EXISTING AREA INLET

BOUNDARY

N

60 0 60 120

SCALE IN FEET

SCALE: 1" = 60'-0"

- PRELIMINARY -
NOT FOR CONSTRUCTION

CONFIDENTIAL

THESE DRAWINGS ARE CONFIDENTIAL IN NATURE. ANY MISUSE OR UNAUTHORIZED DISTRIBUTION OF THE DRAWINGS CONTAINED HEREIN WILL BE A VIOLATION OF THIS CONFIDENTIALITY REQUIREMENT AND SUBJECT THE VIOLATOR TO LIABILITY. REVIEW OF THESE MATERIALS BY RECIPIENT SHALL CONSTITUTE AN ACCEPTANCE OF THESE TERMS AND THE TERMS OF ANY UNDERLYING CONFIDENTIALITY AGREEMENT WE MAY HAVE EXECUTED IN OBTAINING THIS INFORMATION FROM A THIRD PARTY. IF THE RECIPIENT IS NOT IN AGREEMENT WITH THE OBLIGATION OF CONFIDENTIALITY THEN THE DRAWINGS SHALL BE RETURNED TO THE ORIGINATOR.

REV	DESCRIPTION	DWN	CHK	APP	DATE
A	PRELIMINARY	SJM			OPEN

WATSON COGENERATION STEAM AND ELECTRIC RELIABILITY PROJECT

Kiewit

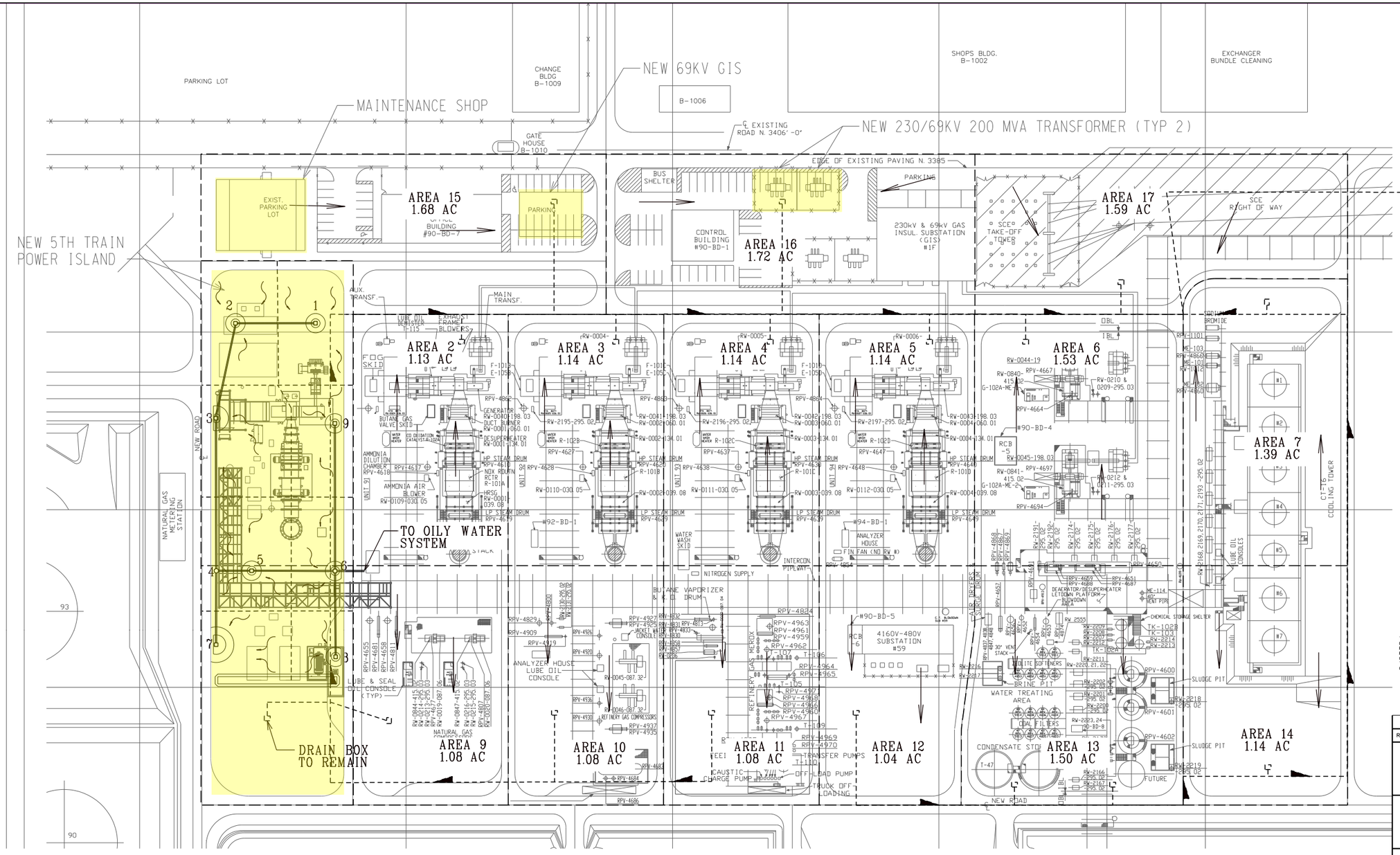
Kiewit Power
9401 Renner Blvd.
Lenexa, Kansas 66219

WATSON COGENERATION FACILITY
(PROJECT PLUS EXISTING FACILITY)
PRE-DEVELOPMENT DRAINAGE AREAS
AND ACREAGES - FIGURE A-1

	by	date
DESIGNED	SJM	12-18-09
DRAWN	SJM	12-18-09
CHECKED		
APPROVED		

DRAWING NUMBER

2007-047-CM-002



- PRELIMINARY -
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REV	DESCRIPTION	DWN	CHK	APP	DATE
A	PRELIMINARY	SJM			OPEN

PROJECT COMPONENTS

EXISTING STORM SEWER

FLOW ARROW

EXISTING AREA INLET

BOUNDARY

N

60 0 60 120

SCALE IN FEET

SCALE: 1" = 60'-0"

WATSON COGENERATION STEAM AND ELECTRIC RELIABILITY PROJECT

Kiewit

Kiewit Power
9401 Renner Blvd.
Lenexa, Kansas 66219

WATSON COGENERATION FACILITY
(PROJECT PLUS EXISTING FACILITY)
POST DEVELOPMENT DRAINAGE AREAS
AND ACREAGES - FIGURE A-2

	by	date
DESIGNED	SJM	12-18-09
DRAWN	SJM	12-18-09
CHECKED		
APPROVED		

DRAWING NUMBER

2007-047-CM-003

2007-047-CM-003-POST.dgn 12/30/2009 5:06:53 PM Stephen.Moore

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION
FOR THE *WATSON COGENERATION STEAM AND ELECTRICITY RELIABILITY PROJECT*

Docket No. 09-AFC-1

PROOF OF SERVICE LIST
(Revised 9/23/09)

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*indicates change

DECLARATION OF SERVICE

I, Cindy Kyle-Fischer, declare that on January 6, 2010, I served and filed copies of the attached *Responses to CEC Data Request Set 1 (32) and Set 2 (40 – 48)*, dated January 2010. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: **[www.energy.ca.gov/sitingcases/watson]**.

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(*Check all that Apply*)

FOR SERVICE TO ALL OTHER PARTIES:

_X_ * sent electronically to all email addresses on the Proof of Service list who indicated "email preferred";

_X_ by personal delivery or by depositing in the United States mail at _Denver, Colorado_ with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses **NOT** marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

___sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

_X_*depositing in the mail (Federal Express) _10_ paper copies and _2_CDs, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 09-AFC-1
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct.

_____:
Cindy Kyle-Fischer