South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 · www.aqmd.gov

February 13, 2014

Mr. Doug Corcoran
Vice President
Waste Management Disposal & Recycling Services Inc. (Bradley Landfill)
9081 Tujunga Avenue
Sun Valley, CA 91352

Subject: Waste Management Disposal & Recycling Services Inc. (Bradley Landfill), Facility ID 050310, Title V Facility Permit Revision No. 3

Dear Mr. Corcoran,

Enclosed please find the revised Title Page, Table of Contents, Section A, Section H, and Section I of your Title V Facility Permit. The revised sections reflect the approval of a Minor Permit Revisions of the Title V permit. The South Coast Air Quality Management District (SCAQMD) issued a draft permit for Environmental Protection Agency (EPA) review on December 27, 2013, and no comments were received from the EPA. The revision to Section A and Section I as shown below.

Section A, Facility Information

Appl. No.	Facility Information	Description
N/A	Contact Person	The Contact Person has been updated.

Section I, Plans and Schedules

Appl. No.	Plan	Description
486469	Rule 1110.2 I & M Plan	Plan for using portable analyzer to check engine emissions.

Also enclosed is Section H of your Title V Facility Permit. Section H was erroneously omitted in the transmittal of the Final Title V Permit (Renewal & Revision No. 2).

Please review the attached pages and then insert the enclosed sections in you Title V Facility Permit, and discard the earlier versions. If you have any questions concerning changes to your permit, or if you determine any administrative error, please contact Angela Shibata (909) 396-2737, within 30 days of the receipt of your permit.

Sincerely,

Andrew Y. Lee, P.E.
Senior Engineering Manager
Engineering & Compliance

AYL: CDT: AIS
Enclosures
cc: (w/ enclosure)
Gerardo Rios, EPA Region IX
Compliance
Title V Central File
A/N 486461 Title V Permit Revision (03)

FACILITY PERMIT TO OPERATE

WASTE MGMT DISP &RECY SERVS INC (BRADLEY
9227 TUJUNGA AVE
SUN VALLEY, CA 91352

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR A COPY THEREOF MUST BE KEPT AT THE LOCATION FOR WHICH IT IS ISSUED.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT SHALL NOT BE CONSTRUED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF ANY OTHER FEDERAL, STATE OR LOCAL GOVERNMENTAL AGENCIES.

Barry R. Wallerstein, D. Env.
EXECUTIVE OFFICER

By _____ for
Mohsen Nazemi, P.E.
Deputy Executive Officer
Engineering & Compliance

FACILITY PERMIT TO OPERATE
WASTE MGMT DISP &RECY SERVS INC (BRADLEY

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FACILITY PERMIT TO OPERATE
WASTE MGMT DISP &RECY SERVS INC (BRADLEY

SECTION A: FACILITY INFORMATION

LEGAL OWNER &/OR OPERATOR:	WASTE MGMT DISP &RECY SERVS INC (BRADLEY
LEGAL OPERATOR (if different than owner):	
EQUIPMENT LOCATION:	9227 TUJUNGA AVE SUN VALLEY, CA 91352-1542
MAILING ADDRESS:	9081 TUJUNGA AVE SUN VALLEY, CA 91352
RESPONSIBLE OFFICIAL:	DOUG CORCORAN
TITLE:	VICE PRESIDENT
TELEPHONE NUMBER:	(818) 252-3147
CONTACT PERSON:	PHILIP PERLEY
TITLE:	SENIOR DISTRICT MANAGER
TELEPHONE NUMBER:	(818) 252-3202
TITLE V PERMIT ISSUED:	December 12, 2012
TITLE V PERMIT EXPIRATION DATE:	December 11, 2017

TITLE V	RECLAIM	
YES	NOx:	NO
	SOx:	NO
	CYCLE:	0
	ZONE:	COASTAL

FACILITY PERMIT TO OPERATE
WASTE MGMT DISP &RECY SERVS INC (BRADLEY

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

NONE

FACILITY PERMIT TO OPERATE
WASTE MGMT DISP &RECY SERVS INC (BRADLEY

SECTION I: PLANS AND SCHEDULES

This section lists all plans approved by AQMD for the purposes of meeting the requirements of applicable AQMD rules specified below. The operator shall comply with all conditions specified in the approval of these plans.

Documents pertaining to the plan applications listed below are available for public review at AQMD Headquarters. Any changes to plan applications will require permit modification in accordance with Title V permit revision procedures.

List of approved plans:

Application	Rule
267044	431.1
343361	1150.1
486469	1110.2
527802	3003

NOTE: This section does not list compliance schedules pursuant to the requirements of Regulation XXX - Title V Permits; Rule 3004(a)(10)(C). For equipment subject to a variance, order for abatement, or alternative operating condition granted pursuant to Rule 518.2, equipment specific conditions are added to the equipment in Section D or H of the permit.

FACILITY PERMIT TO OPERATE
WASTE MGMT DISP &RECY SERVS INC (BRADLEY

APPLICATION NUMBER **486469**

RULE 1110.2(f)(1)(D) INSPECTION AND MONITORING (I & M) PLAN FOR THE FACILITY LOCATED AT 9227 TUJUNGA AVE., SUN VALLEY, CA 91352.

Please refer to the application you submitted for the evaluation of your Inspection and Monitoring (I & M) plan under District Rule 1110.2(f)(1)(D), for the facility described above.

The Rule 1110.2 Inspection & Monitoring plan you submitted has been APPROVED.

A copy of your approved plan, together with any addendum, statements or declarations you provided during the evaluation of your plan, is attached. In accordance with Rule 1110.2(f)(1)(D)(ix), any changes in equipment, control equipment, operating conditions or emission limits will require that you submit an application to the District for the revision of your I & M plan.

Attachment 1

Attachment 1 – Responses to AQMD Comments

	Questions from AQMD	WM Responses
1	Name of contractor (was Run Energy), list of current contractors/staff with R1110.2 Portable Analyzer (PA) training certification.	Power Management Inc. (PMI), a Division of American Environmental Group, are contracted to operate the Bradley Landfill. A list of current PMI staff at Bradley with PA training certification include: -Don Hart -Tom Beaty -Rob Klock -James Smith -Bob Edwards
2	PA emissions check procedure for CO.	The PA monitoring is conducted quarterly to measure CO emissions per AQMD Rule 1110.2. PMI corrects the CO emission reading from the PA to 15% oxygen using the formula below: CO (ppm) corrected to 15% O2 = (20.9-15) / (20.9-Engine O2 %)*CO (ppm) PMI verifies that the CO emissions are in compliance with the permit limit of 2000 ppmv, corrected to 15% oxygen and 250 ppmv corrected to 15% oxygen, as required by Rule 1110.2.
3	PA calibration schedule and procedure.	PMI uses the ECOM Advanced Data Acquisition System (DAS) to record all PA calibration results. The ECOM is calibrated in the field according to the following calibration gas levels: Carbon Monoxide (CO) (799 ppm), Nitrous Oxide (NO) (102 ppm), and Nitrogen Dioxide (NO2) (98 ppm). The ECOM is calibrated every 10 days or after it is used on 10 engines, whichever comes first. The ECOM is also calibrated and a linearity test is conducted by the local ECOM representative bi-annually. Calibration test results are maintained onsite.
4	PA readings recordkeeping format and manner of storage of records	PMI uses the ECOM Advanced DAS to record all PA readings. The results are electronically saved to the facility field computer. The records are also saved in hard copy format and placed in the Quarterly CO Monitoring binder located in the control room at the facility.

Attachment 1 – Responses to AQMD Comments

	Questions from AQMD	WM Responses
5	PA monitoring schedule, copy of two most recent recording events, method for alerting contractor/staff that monitoring is due.	The PA monitoring is conducted quarterly to measure CO emissions per AQMD Rule 1110.2. The most recent carbon monoxide PA monitoring events were 1st Quarter 2013 and 2nd Quarter 2013 for Engines 1, 2, 3, and 5. The most recent PA monitoring event for Engine 4 occurred in 1st Quarter 2012 and 3rd Quarter 2012. These monitoring results are provided in Attachments 2 and 3, respectively. Waste Management utilizes two contractors, CB&I and PMI to coordinate the scheduling of the required monitoring events. PMI has dedicated personnel who perform the PA testing. CB&I coordinates directly with these personnel as well as plant operators to ensure the testing has occurred within the required timeframe.
6	Daily schedule and procedure for monitoring and verifying set points for various loads	The cylinder set points are established at the normal load and the minimum, midpoint, and maximum loads that actually occur during normal operations as described in the current I&M Plan. The average cylinder temperature set points are evaluated and verified for compliance with applicable emission limits during the annual engine source test and quarterly CO emission checks by measuring emissions at low, mid, and high loads. The average engine cylinder temperature is monitored daily and recorded in a daily log to ensure that the cylinder temperature falls within the acceptable range. The daily log is maintained onsite by the plant operator. Oxygen is continuously monitored by the Total Electronic Management (TEM) unit and is maintained in the range of 4.26% to 9.12%. By ensuring that Oxygen is maintained within this permitted range, daily CO emissions are assumed to be below the CO emission limit. The engine's exhaust oxygen value is good indicator of CO emission compliance.
7	List of malfunctions and associated codes, procedure for alerting staff, procedure for correcting out of range parameters, procedure for follow-up emission check.	A list of malfunctions and associated codes has been included in the Attachment 4. Plant operators are notified if parameters are close to becoming out of permit range by an auto-dialer that sends a page with a malfunction code to each operator's cell phone. Plant operators will make adjustments to the system in an attempt to correct out of range parameters. A follow-up emission check will be performed with the PA if the TEM system indicates that the emissions are out of permit range. The PA emission results will assist in verifying the accuracy of the TEM system.

Attachment 1 – Responses to AQMD Comments

	Questions from AQMD	WM Responses
8	Rule 1110.2 quarterly report procedure. List whether Protocol Forms 1, 2, or 3 are used for record keeping.	Within 15 days of each calendar quarter Waste Management submits a Rule 1110.2 Quarterly report using the AQMD Rule 1110.2 Quarterly Report form. The report lists any breakdown, fault, malfunction, engine or control system operating parameter out of the range established by the facility's current I&M plan or permit condition that occurred during that period. All Title V Deviations, Emergencies, and/or Breakdowns are recorded on 500 N forms during the quarter and attached to the Rule 1110.2 Quarterly Report. PMI uses Rule 1110.2 Recordkeeping FORM 1 for portable analyzers.
9	CO concentrations corresponding to permit condition limits for CO (9.9 lbs/hr, 2.5 grams/bhp-hr) used to demonstrate compliance at emission checks.	PMI varies that the CO emissions are in compliance with the permit limit of 2000 ppmv, corrected to 15% oxygen and 250 ppmv corrected to 15% oxygen, as required by Rule 1110.2.

Attachment 4

Table of Malfunctions and Codes from the TEM Unit

11 Total List of Logic Informations

bit	no.	type	logic 0	logic 1	specification
0.0		message	manual	auto	genset operating mode "auto"
0.1		message	auto	manual	power control operating mode "manual "
0.2		message	auto	manual	mixture control operating mode "manual "
0.4	103	message	mains parallel	island	operating mode island
1.4	203	message	OK	message	overtemp. air inlet
2.0	156	message	OK	failure	pre-heating failure
2.3		message	disable	enable	enable pre-heating
3.0		message	inactive	active	oil change active
3.3		message	alarm	OK	collective alarm
3.4		message	fault	OK	collective fault
4.1		message	off	running	engine running
4.3	106	message	off	on	power circuit breaker On
4.4	105	message	disabled	enabled	key switch manual op. mode
4.5		message	inactive	active	ramp down for low CH4 value
4.6		message	inactive	active	calibration of CH4 sensor
8.2	868	message		stop limit	MK ctrl. valve limit stop warm
8.3	867	message		stop limit	MK ctrl. valve limit stop cold
9.2	885	message		stop limit	GK ctrl. valve limit stop warm
9.3	886	message		stop limit	GK ctrl. valve limit stop cold
13.2		message		SP n. reached	gas mixer start pos. not reached
13.3		message		SP n. reached	gas mixer stop pos. not reached
15.6	124	message		available	gas available
16.0	124	message	OK	too low	gas pressure gas regul. section
17.0	197	message		LR active	power red. due to throttle position
17.1	207	message		LR active	power red. due to jacket water temp.
17.2	201	message		LR active	power red. due to receivertemp.
17.4	311	message		LR active	power red. due to CH4-value
18.7		message	off	on	test mode collective message
20.0		message	off	on	ignition
20.1		message	off	on	starter
20.2		message	off	on	speed governor
20.3		message	off	on	pre-lube pump
20.4		message	off	on	pre-heating
20.5		message	off	on	engine cool. circuit pump
20.7		message	off	on	intercooler circuit pump
21.3		message	off	on	refilling lube oil
21.4		message	off	on	pump off lube oil
22.6		message	closed	open	gas valve A1
22.7		message	closed	open	gas valve A2
26.0		message	off	on	reset emerg. shutdown unit
26.2		message	disable	enable	enable (request) power circuit breaker on
27.0		message		active	GK dry cooler stage 2
27.1		message		active	GK dry cooler stage 3

total list of logic informations (continuation)

bit	no.	type	logic 0	logic 1	specification
27.2		message		active	GK dry cooler stage 4
27.3		message		active	NK dry cooler stage 2
27.4		message		active	NK dry cooler stage 3
27.5		message		active	NK dry cooler stage 4
33.0	196	alarm		too low	P196 lube oil pressure too low
33.1	196	alarm		too low	interval pre-/re-lube pressure too low
33.2	208	alarm		too high	T208 lube oil overtemperature
33.3	234	alarm		too low	L234 lube oil level too low
33.4	234	alarm		too high	L234 lube oil level too high
33.5		alarm		alarm	lube oil filter dirty
34.0	157	alarm		too high	P157 exhaust back pressure too high
34.1	200	alarm		too high	S200 speed before start too high
34.2	145	alarm		too low	P145 low pressure crank case
37.0	461	alarm		low temp.	T461 low temperature comb. chamber A1
37.1	462	alarm		low temp.	T462 low temperature comb. chamber A2
37.2	463	alarm		low temp.	T463 low temperature comb. chamber A3
37.3	464	alarm		low temp.	T464 low temperature comb. chamber A4
37.4	465	alarm		low temp.	T465 low temperature comb. chamber A5
37.5	466	alarm		low temp.	T466 low temperature comb. chamber A6
37.6	467	alarm		low temp.	T467 low temperature comb. chamber A7
37.7	468	alarm		low temp.	T468 low temperature comb. chamber A8
38.2	471	alarm		low temp.	T471 low temperature comb. chamber B1
38.3	472	alarm		low temp.	T472 low temperature comb. chamber B2
38.4	473	alarm		low temp.	T473 low temperature comb. chamber B3
38.5	474	alarm		low temp.	T474 low temperature comb. chamber B4
38.6	475	alarm		low temp.	T475 low temperature comb. chamber B5
38.7	476	alarm		low temp.	T476 low temperature comb. chamber B6
39.0	477	alarm		low temp.	T477 low temperature comb. chamber B7
39.1	478	alarm		low temp.	T478 low temperature comb. chamber B8
40.4	206	alarm		overtemp	T206 overtemp. jacket water engine outlet
43.0	198	alarm		alarm	power too long below 30%
44.0	311	alarm		too low	Q311 CH4-value too low
44.1		alarm		too long	calibration ch4 sensor (ramp down)
46.0	209	alarm		overtemp	T209 overtemperature generator winding U1
46.1	210	alarm		overtemp	T210 overtemperature generator winding V1
46.2	211	alarm		overtemp	T211 overtemperature generator winding W1
46.5	459	alarm		overtemp	T459 overtemperature generator bearing A
46.6	460	alarm		overtemp	T460 overtemperature generator bearing B
47.0		alarm		alarm	ignition system collective alarm
47.7		alarm		alarm	stepper motor board collective alarm
48.0		alarm		alarm	CAN-bus collective alarm
48.2		alarm		alarm	earth fault analog inputs
48.3		alarm		alarm	speed governor collective alarm
48.4		alarm		below 18V	supply voltage below 18 V
48.5		alarm		over 30V	supply voltage above 30 V
50.3	203	sensor a.			T203 air inlet
53.0	405	sensor a.			T405 GK dry cooler outlet
53.1	419	sensor a.			T419 NK dry. cooler outlet

total list of logic informations (continuation)

bit	no.	type	logic 0	logic 1	specification
55.0	311	sensor a.			Q311 CH4-value
57.0		sensor a.			collective alarm digital inputs bus
57.1		sensor a.			collective alarm digital outputs bus
57.2		sensor a.			collective alarm digital outputs TEM
58.0		sensor a.			parametrizable measurement 01
58.1		sensor a.			parametrizable measurement 02
64.0	196	fault		too low	P196 lube oil pressure too low
64.1	196	fault		too low	interval pre-/post-lube pressure too low
64.2	196	fault		too low	P196 pre-lube pressure at start
64.3	208	fault		too high	T208 lube oil overtemperature
64.4	234	fault		too low	L234 lube oil level too low
64.5	234	fault		too high	L234 lube oil level too high
64.6		fault		fault	lube oil filter dirty
65.2	201	fault		too high	T201 overtemperature receiver
66.1	200	fault		too high	S200 overspeed
66.2	200	fault		too low	S200 low speed
66.3	145	fault		too high	P145 overpressure crank case
66.4		fault		fault	engine does not start
68.0	461	fault		too high	T461 overtemp. comb. chamber A1
68.1	462	fault		too high	T462 overtemp. comb. chamber A2
68.2	463	fault		too high	T463 overtemp. comb. chamber A3
68.3	464	fault		too high	T464 overtemp. comb. chamber A4
68.4	465	fault		too high	T465 overtemp. comb. chamber A5
68.5	466	fault		too high	T466 overtemp. comb. chamber A6
68.6	467	fault		too high	T467 overtemp. comb. chamber A7
68.7	468	fault		too high	T468 overtemp. comb. chamber A8
69.2	471	fault		too high	T471 overtemp. comb. chamber B1
69.3	472	fault		too high	T472 overtemp. comb. chamber B2
69.4	473	fault		too high	T473 overtemp. comb. chamber B3
69.5	474	fault		too high	T474 overtemp. comb. chamber B4
69.6	475	fault		too high	T475 overtemp. comb. chamber B5
69.7	476	fault		too high	T476 overtemp. comb. chamber B6
70.0	477	fault		too high	T477 overtemp. comb. chamber B7
70.1	478	fault		too high	T478 overtemp. comb. chamber B8
70.4	461	fault		too low	T461 low temp. comb. chamber A1
70.5	462	fault		too low	T462 low temp. comb. chamber A2
70.6	463	fault		too low	T463 low temp. comb. chamber A3
70.7	464	fault		too low	T464 low temp. comb. chamber A4
71.0	465	fault		too low	T465 low temp. comb. chamber A5
71.1	466	fault		too low	T466 low temp. comb. chamber A6
71.2	467	fault		too low	T467 low temp. comb. chamber A7
71.3	468	fault		too low	T468 low temp. comb. chamber A8
71.6	471	fault		too low	T471 low temp. comb. chamber B1
71.7	472	fault		too low	T472 low temp. comb. chamber B2
72.0	473	fault		too low	T473 low temp. comb. chamber B3
72.1	474	fault		too low	T474 low temp. comb. chamber B4
72.2	475	fault		too low	T475 low temp. comb. chamber B5
72.3	476	fault		too low	T476 low temp. comb. chamber B6

total list of logic informations (continuation)

bit	no.	type	logic 0	logic 1	specification
72.4	477	fault		too low	T477 low temp. comb. chamber B7
72.5	478	fault		too low	T478 low temp. comb. chamber B8
73.0	46x	fault		fault	comb. chamber monitoring A (mean v.)
73.1	47x	fault		fault	comb. chamber monitoring B (mean v.)
73.2	46x	fault			
73.3	47x	fault			
75.0	207	fault		too high	T207 overtemp. jacket water engine inlet
75.1	206	fault		too high	T206 overtemp. jacket water engine outlet
79.2	126	fault		fault	dp flow monitoring engine cooling circuit
79.3	309	fault		fault	dp flow monitoring intercooler circuit
80.0	123	fault		fault	low water engine cooling circuit
80.1	308	fault		fault	low water intercooler circuit
82.0		fault		fault	mixture controller
82.6		fault		too long	calibration ch4 sensor
82.7	311	fault		too low	Q311 CH4-value too low
83.0		fault		overload	engine overload
83.1		fault		fault	power control
83.2		fault		fault	power reduction below 80% necessary
83.3	198	fault		fault	power too long below 30%
84.2	124	fault		fault	P124 gas pressure
84.4	147	fault		fault	temperature monitoring gas regul. section
86.0	209	fault		too high	T209 overtemp. generator winding U1
86.1	210	fault		too high	T210 overtemp. generator winding V1
86.2	211	fault		too high	T211 overtemp. generator winding W1
86.3	459	fault		too high	T459 overtemp. generator bearing A
86.4	460	fault		too high	T460 overtemp. generator bearing B
87.0		fault		fault	synchronization failure
87.1	198	fault		rev. power	reverse power
87.6	121	fault		fault	collective fault generator protection
89.2		fault		fault	circuit breaker TEM
90.0		fault		fault	reset while engine was running
90.1		fault		fault	internal quick stop
90.2	117	fault		fault	external quick stop without heat removal
90.3	116	fault		fault	external quick stop with heat removal
90.7		fault		fault	security chain open
92.0		fault		fault	ingition system collective fault
93.0		fault		fault	speed governor collective fault
93.1		fault		fault	stepper motor board collective fault
93.2		fault		fault	CAN-Bus collective fault
94.0		fault		fault	control parameters
97.0	196	sensor f.			P196 lube oil pressure before filter
97.2	208	sensor f.			T208 lube oil
97.4	234	sensor f.			L234 lube oil level
98.0	201	sensor f.			T201 receiver
98.4	145	sensor f.			P145 crank case pressure
99.2	200	sensor f.			S200 speed governor actual speed
100.0	203	sensor f.			T203 air inlet
101.0	461	sensor f.			T461 comb. chamber A1

WASTE MANAGEMENT DISPOSAL & RECYCLING SERVICES INC. (BRADLEY)

Inspection and Monitoring Plan – Rule 1110.2
Landfill Gas Fired Internal Combustion Engines 1 to 5
Permit Nos. F73941, F73942, F73943, F73944, F73945
Facility ID 050310

July 2008

Prepared for:

WASTE MANAGEMENT, INC.

Bradley Landfill and Recycling Center
9227 Tujunga Avenue,
Sun Valley, CA 91352-1542

Prepared by:

Shaw Environmental, Inc.

3347 Michelson Drive, Suite 200
Irvine, California 92612

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1.0 Introduction

Waste Management Disposal & Recycling Services, Inc. (Bradley) operates five internal combustion (IC) engines. Each engine is an 1877 BHP Deutz Model TBG620V16K landfill gas (LFG) fired lean burn engine with 16 cylinders, turbocharged, and intercooled. Each engine drives a 1.3 MW electrical generator and is equipped with Rule 218 approved continuous emissions monitoring system (CEMS) for Oxides of Nitrogen (NOx) and Oxygen (O_2).

1.1 Purpose

Bradley is submitting this document to serve as the inspection and monitoring (I&M) plan for the engines as required by South Coast Air Quality Management District (SCAQMD) Rule 1110.2, amended February 1, 2008. The engines will be inspected and maintained per this I&M plan.

2.0 Engine Operating Parameters

The IC engines have spark ignition and burn LFG generated in the landfill to generate electricity. Each engine drives a 1.3 MW generator.

2.1 Operating Parameters

The engine operating parameters include: i) engine cylinder or combustion temperature; ii) water jack temperature; iii) crankcase pressure; and iv) engine operating load.

2.2 Air-Fuel Mixture Control

Each Deutz engine is equipped with a Total Electronic Management (TEM) system that provides complete engine control. The TEM controls functions such as engine start/stop, output control, gas-air (or fuel-air) mixture control with short correction time, integrated digital speed control, component system monitoring including the cooling and lube oil systems. The TEM also transmits measured values, operation, alarm and fault messages via a serial interface to the master control system.

The TEM, through a fuel-air mixer, controls the gas-air mixture going into the combustion chamber based on the average combustion cylinder temperature. The objective of the TEM is to maintain the average temperature of the 16 cylinders at the established set point. The set point of the average cylinder temperature is established such that the performance of the engine is optimum at any given operating load. The fuel-air mixer works by allowing more or less gas into the inlet manifold to make sure the average cylinder temperature is at the established set point.

At any given load, as long as the engine operates with the average cylinder temperature in the range corresponding to the set point, the engine's performance is optimized. The emissions will also be within the permissible limits. However, there maybe deviations in the emissions in certain situations such as drop in the fuel quality, water in the fuel line, etc.

2.2.1 Control Set Points

At Bradley, the cylinder set points are established at the normal load and the minimum, midpoint, and maximum loads that actually occur during normal operations. Following are the cylinder temperature set points for the various operating loads at Bradley:

Table 2.1 Operating Load and Temperature Set Points

Engine Operating Condition	Operating Load	Average Cylinder Temperature Set Point
Minimum Load	40 %	Between 260 °C and 295 °C
Midpoint Load	60 %	Between 280 °C and 320 °C

Engine Operating Condition	Operating Load	Average Cylinder Temperature Set Point
Normal Load	70 %	Between 285 °C and 320 °C
Maximum Load	80 %	Between 297 °C and 330 °C

The set points will be checked for compliance with the applicable emission limits during the annual engine source test and CO emission checks using a portable analyzer (discussed later). The set points will be reestablished as necessary.

2.2.2 Malfunctions

The TEM system monitors the cylinder temperature and compares it with the average cylinder temperature set point. If the temperature of any cylinder drops 70 °C below the average cylinder temperature set point for a period exceeding 15 minutes, the TEM sends out a Low Cylinder Temperature alarm. If the cylinder temperature remains low for 30 minutes, the engine shuts down. The engine also shut down if temperature in any cylinder temperature reaches 600 °C.

A fuel-air mixer malfunction is a deviation of the combustion control and will result in a fault.

2.2.3 Emission Limits

Compliance with the applicable emission limits for the engines are demonstrated during the annual compliance engine source test, conducted by a District-approved contractor. Additionally, compliance with the applicable CO emission limit will be demonstrated during the CO emission checks performed with a CO portable analyzer. NOx emissions are monitored continuously through the CEMS.

3.0 Carbon Monoxide Emission Checks

The engine is equipped with Rule 218 approved CEMS for NOx and O_2. Per the requirements of Rule 1110.2, a portable CO analyzer will be used to check the engine exhaust for CO emissions at least quarterly, or every 2000 engine operating hours. No engine maintenance or tuning will be scheduled within 72 hours prior to the emission check.

3.1 Portable Analyzer

A portable CO analyzer will be used to conduct CO emission checks. The analyzer will be calibrated, maintained and operated in accordance with the manufacturer's specifications and recommendations and per the requirements of SCAQMD published protocol for the periodic monitoring of CO from stationary engines subject to Rule 1110.2, or subsequent protocol approved by EPA and the Executive Officer.

The CO emission checks will be performed by a person who has completed the District-approved training program for the portable analyzer and has received certification from the District.

4.0 Monitoring and Inspection

The engine load and fuel input rate is measured continuously and recorded. The data is compiled in the form of a daily heat input report, which is reviewed the following day for compliance determination. Following are the acceptable ranges of the engine operating parameters:

- Water Jacket Outlet Temperature – Alarm is generated at a temperature of 96 °C while the engine shuts down at a temperature of 98 °C.
- Crankcase Pressure – The engine shuts down at a pressure of 20 mbar.
- Cylinder or Combustion Temperature – Alarm is generated if the temperature is 70 °C below the set point for more than 15 minutes and the engine shuts down if the temperature continues to remain low for 30 minutes. The engine also shuts down if the temperature of any cylinder reaches 600 °C.
- Engine Operating Load

The TEM system records the operating hours of the engine. The site engine operator takes daily notes of operating hours, load settings, mixer readings, throttle position, oil hours, engine water temperature, and air inlet temperature and oil pressure. The operating hours since the last CO emission check can be obtained by subtracting the operating hours on the day of emission check from the current operating hours.

A fuel-air mixer malfunction is a deviation of the combustion control and will generate a fault alarm.

5.0 Maintenance

The engines at Bradley are operated and maintained by Run Energy, a contractor hired by Bradley. Run Energy has a 24-hour on-call operator who responds to any engine malfunction alarm and other call. The operator diagnoses the cause of the alarm and repairs the malfunction, if any, in accordance with Run Energy procedures.

Any breakdown resulting in a violation of Rule 1110.2 or a permit condition, any excess emissions, or any incident resulting in the parameters going out-of-range will be addressed in the manner specified in Rule 1110.2 (February 1, 2008).

5.1 Preventive Maintenance

Run Energy's maintenance plan is based on engine hours of operation. The preventive maintenance program consists of four progressive levels of service G1, G2, G3 and G4. Each level consists of measurements, adjustments, calibration check, and visual inspection of the engine and generator. The corrective and preventive maintenance plan is as follows:

- G1, G2, G3, and G4 levels of service every 1000 $\pm$ 100 hours of operation;
- Engine oil changes, spark plug cleaning, and air filter cleaning are performed once every 325 to 375 hours of operation;
- Fuel mixer cleaning is performed once every 2000-4000 hours of operation;
- Top end de-coat is performed once every 4000-8000 hours of operation;
- Top end overhaul is performed once every 8000-12000 hours of operation;
- Bottom end overhaul is performed once every 12000-16000 hours of operation

All maintenance and overhaul is performed in according with Run Energy procedures.

6.0 Notification

Run Energy has a 24-hour on-call support operator who responds to the malfunction alarms and other calls. The operator diagnoses the cause of the problem and performs the necessary repairs. If the problem is beyond the operator's knowledge or expertise, the operator calls the supervisor for further action.

Run Energy coordinates with Waste Management and Shaw Environmental, Inc to facilitate the notification procedure to the SCAQMD. All notifications are made per the requirements of SCAQMD Rules 1110.2, 430, and 218.

7.0 Recordkeeping

The following documents are retained on site:

- The daily heat input reports for all engines
- The daily readings taken by the engine site operator. The TEM electronically stores the engine operating hours and other information.
- The engine source test reports, CEMS units Relative Accuracy Test Audit (RATA) and calibration gas audit (CGA) reports
- All engine operating parameters, engine start-ups, shutdowns, and malfunctions, and emission monitoring data

All other data collected and recorded as described in this plan and required by Rule 1110.2 will be maintained on-site for five years and made available to SCAQMD upon request.

8.0 Revisions to I&M Plan

Bradley will follow all the procedures outlined in this plan. If any changes are planned to the operating procedures, the I&M plan will be updated and submitted to the SCAQMD for approval. Following the approval of the revised/updated plan, the planned changes will be made effective.