YAKIMA REGIONAL CLEAN AIR AGENCY

Order of Approval Permit No NSRP-16-WFI-17

New Source Review Order of Approval for Welch Foods, Inc. for Installation of a New 1000 Horsepower (Hp) Cleaver-Brook (CBEX-E 700-1000-150ST)

IN THE MATTER OF approving a project which establishes a new air contaminant source at Welch Foods, Inc., in Grandview, WA. THIS ORDER OF APPROVAL IS HEREBY ISSUED TO:

Applicant/Permittee:	Welch Foods, Inc. *Food Processing Facility*
Located at:	401 Grandridge Rd. Grandview, WA. 98930
Contact:	Welch Foods, Inc. Attn: Tom Brooke, Plant Engineer P.O. Box 38 Grandview, WA. 98930 (509) 882-3112

IN COMPLIANCE WITH THE PROVISIONS OF THE STATE OF WASHINGTON CLEAN AIR ACT (Revised Code of Washington (RCW)) CHAPTER 70.94.152, WASHINGTON ADMINISTRATIVE CODE (WAC) 173-400-110, 173-460-040:

ISSUE DATE: October 23, 2017.

THIS ORDER OF APPROVAL PERMIT IS SUBJECT TO THE FOLLOWING CONDITIONS:

Construction/Installation of the equipment must be conducted in compliance with all data and specifications submitted with the New Source Review (NSR) application under which this Order of Approval is issued unless otherwise specified herein. The conditions and limitations of this NSR Order of Approval are attached as follows:

1.0 DESCRIPTION OF THE SOURCE

1.1 Welch Foods, Inc., hereafter referred to as the Permittee, the Facility, or the Source is the owner and operator of the fruit processing facility at 401 Grandridge Road, Grandview, WA. The Permittee is proposing to install a new 1000 Horsepower (Hp) Cleaver-Brook steam boiler (CBEX-E 700-1000-150ST) for the process. The main source of fuel for this new boiler is Natural Gas (NG).

1.2 The Facility is also proposing to remove two old boilers are Boiler #1 and Boiler #2 which were installed in year 1962 and 1972, respectively. Boiler #1 is a 250 Hp Continental boiler. Boiler #2 is a 725 Hp Keystone Erie City Iron Works. Figure 1 shows old boilers No.1 and No. 2's stack locations as well as the new boiler's stack location.

1.3 Air emissions from operating this boiler are in the form of small Particulate Matter (PM_{10}, $PM_{2.5}$), Oxides of Nitrogen and Sulfur (NO_x, SO_x), Volatile Organic Compounds (VOCs) some of which are known as Hazardous Air Pollutants (HAPs) and Toxic Air Pollutants (TAPs) in accordance with the Federal Clean Air Act (FCAA) or Washington Administrative Code (WAC), respectively. These air emissions are emitted during boiler operation.

1.4 The City of Grandview exempted this project from the State Environmental Policy Act (SEPA) review process as signed by the City dated August 8, 2017 (NSR application).

1.5 The floor plan, drawing, and specifications of the boiler are shown in Figures 1 and 2 and Table 1, respectively. These Figures and specification are part of this NSR Order of Approval (Order/Permit) as provided by the Permittee.

1.6 Installation of this new boiler, is considered a new source of air contaminants requiring a New Source Review (NSR) and an Order of Approval (Order/Permit) pursuant to the Revised Code of Washington (RCW) 70.94.152 and the Washington Administrative Code (WAC) 173-400-110 and 173-460-040.

1.7 The Facility has three previously issued Orders/Permits: SM97-001, SM 97-004, and SM 2002-001 which were issued on December 30, 1997, December 30, 1997, and July 27, 2002, respectively. Order number SM 97-001 is for limiting the total potential emission from two boilers in Plant #1 to not exceed the thresholds for the major source. Order number SM 97-004 is for limiting the total potential emission from Boiler #1, Boiler #2, and Boiler #3 in Plant #2 to not exceed the thresholds for the major source. Order number SM 2002-001 is for limiting the total emission from both plants to not exceed the thresholds for the major source and limit the quantity of consumed fuel oil for all boilers and the percent sulfur content.

2.0 DETERMINATIONS

In relation to the above installation, YRCAA determines that the source shall comply with the Federal, State and Local regulations and laws including but not limited to the following determination:

2.1 The Facility is located in an area that is in attainment with all state and federal air quality standards for all criteria pollutants;

2.2 The Facility is not a major stationary as of the date of issuance of this Order nor is this installation is subject to the Prevention of Significant Deterioration (PSD) permitting requirements of WAC 173-400-700 through 173-400-750;

2.3 The boiler have a heat capacity greater than 10 MMBtu/hr and therefore it is subject to 40 CFR Part 60 New Source Performance Standards (NSPS) for Area Sources: Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units;

2.4 The boiler have a heat capacity greater than 4 MMBtu/hr and therefore this installation is subject to the NSR requirements of WAC 173-400-110 and WAC 173-460-040;

2.5 The conditions and limitations of this Order will become part of a Title V Air Operating Permit (AOP) when and if the Permittee becomes a Title V source; and

2.6 The Facility is subject to WAC 173-400-099 – Registration Program and YRCAA Regulation 1, 4.01 – Registration Program, unless the Facility becomes a Title V Permits source, pursuant to the State and Federal Clean Air Acts.

THEREFORE, it is hereby ordered that the project as described above, in the NSR application, and in detailed plans, specifications and other information submitted in reference thereto, is **APPROVED** for operation, **PROVIDED** the specification submitted with the application and the following conditions are met:

3.0 OPERATIONAL APROVAL CONDITIONS

3.1 This Order is for the 1000 Hp Cleaver-Brook steam boiler as specified above, located at 401 Grandridge, Grandview, Washington, in accordance with the plan and specifications submitted with the NSR application to YRCAA and specified in Table 1 of this Order using Natural gas only.

3.2 Best Available Control Technology (BACT) pursuant to RCW 70.94.152, WAC 173-400-113 and WAC 173-460-060 shall be satisfied for any proposed new facility or modified air emission source to control air emissions. YRCAA finds BACT to be satisfied as follows:

3.2.1 The Cleaver-Brook boiler will be equipped with a Ultra-Low NOx burner as stipulated in the specification submitted to YRCAA;

3.2.2 The maximum air emission limits for NOx, CO, PM and other air emissions shall be limited, as per the submitted specifications with this NSR application and specified in the emission limit section below;

3.2.3 An Operation and Maintenance (O&M) plan for the boiler shall be developed as specified in this Order and manufacturers recommended standards;

3.2.4 The boiler must be operated as per manufacturer specifications and certification;

3.2.5 TAPs air emissions shall always be below the Acceptable Source Impact Levels (ASIL);

3.2.6 Only NG shall be used as the main fuel source for the boiler;

3.2.7 The boiler shall meet the ASIL of WAC 173-460 and the National Ambient Air Standards (NAAQs) of 40 CFR Part 50 and as specified in this Order; and

3.2.8 The boiler should not operate more than the limits specified in this permit.

3.3 All air emissions from this Facility shall be in compliance with air emission standards at all times. It is the responsibility of the owner to make sure that air emissions are within all known rules and regulations standards, including 173-400-040 and 173-460.

3.4 This Order authorizes the construction of the following equipment:

Table. 1 Authorized Equipment List

Unit No.	Unit Type	Fuel	Manufacturer	Model/ Serial number and/or Size	Process Capacity
1	Industrial Boiler	Natural Gas Only	Cleaver-Brook	Model: CBEX-E 700-1000-150ST Serial: T5978-1-1	1000 Hp

3.5 The Permittee must develop and implement specific O&M plan based on the boiler manufacturer's operations manual as specified in the BACT determination above. In addition, the existing O&M plan must be updated to reflect this installation. The O&M plan must be completed within 120 days of the issuance of this Order.

3.6 Within 120 days from the date of issuance of this Order, the Permittee shall submit notification to YRCAA indicating that the O&M plan is completed and in place. If the Permittee needs to make any future modification to the boiler i.e. model/serial number changes, or its operating procedures, an approval in writing from YRCAA must be obtained before such modification takes place. The O&M documents must also be updated and implemented to reflect such modification.

3.7 No fugitive emissions shall be released from this boiler beyond the property boundary in a quantity that interferes unreasonably with the use and enjoyment of the property upon which the material is deposited or is detrimental to the health, safety or welfare of any person or causes damage to any property or business.

3.8 An initial opacity as measured by 40 CFR Part 60, Appendix A, Method 9, July 1, 2004 from this 1000 Hp Cleaver-Brook boiler installation must be conducted and shall not exceed a zero percent (0%) using NG fuel, average for six consecutive minutes in any given one hour period. The Permittee shall maintain 0% opacity from the boiler at all times, except during periods of startup, shutdown or malfunction as provided in WAC 173-400-081.

3.9 In addition to the initial opacity reading above, once a month, the Permittee shall conduct and record visual opacity from the boiler stack. Zero percent (0%) opacity means no smoke coming out of the stack. Only heat wave maybe seen, but nothing else likes smoke. If the observer sees anything more than what has been explained above, the Permittee shall immediately stop the boiler operation and take corrective action as directed in the O&M plan until visible emissions are below 0% opacity. Corrective actions may include the following:

3.9.1 Certify that the boiler is performing according to its design functions within the acceptable design parameters and is being operated according to O&M procedures. Therefore, it must be checked against any operational conditions that have resulted in compliance in the past. If the boiler is not performing according to design and O&M procedures, the Permittee must take corrective action within 48 hours to correct the problem; or

3.9.2 Conduct an opacity evaluation by a certified opacity reader in accordance with 40 CFR 60, Appendix A, Method 9 and such opacity evaluation shall be conducted within 48 hours to verify compliance with the 0% opacity limit. If opacity is greater than 0% appropriate and timely corrective action must be taken no later than 48 hours to identify and correct the problem causing the opacity. If the Permittee has no certified reader on site, the Permittee should call YRCAA and will be advised accordingly.

3.10 An initial source performance test for NO_x, CO, PM_{10} and $PM_{2.5}$ as specified in this Order using NG fuel shall be conducted no later than 180 days after initial startup of the boiler or issuance of this permit. The Permittee shall provide the source test protocol to YRCAA at least thirty days before the test takes place. The parameters must not be changed or altered prior to the test without written approval from YRCAA.

3.11 The source test must be conducted pursuant to 40 CFR Part 60, Appendix A, Method 7E for NOx and Method 10 for CO in accordance with the limits specified in the emission limit section below.

3.12 The source test for the fine PM_{10} and $PM_{2.5}$ shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 5 with Method 202 or 201A with 202 fronts and back half.

3.13 The Permittee shall repeat the source test for NOx and CO and PM_{10} and $PM_{2.5}$ every five years, thereafter, from the date of the first source test.

3.14 The Permittee shall perform the source performance testing to gauge compliance with this NSR approval while the boiler is operating at its normal operation of the boiler's firing rate. However, the specified limit in the limit section below shall also be applicable to all firing range.

3.15 In accordance with WAC 173-400-105(4) and YRCAA Regulation 1, Article V, Section 5.11(c), the Permittee shall conduct a source test when deemed necessary by YRCAA to demonstrate compliance for any air pollutant, specific to this installation. YRCAA will inform the Permittee of the source test requirement and method at that time, if deemed necessary.

3.16 The Air Pollution Control Officer (APCO) of the YRCAA or his designated staff shall be allowed to enter the Facility at reasonable times to inspect for compliance with applicable laws, regulations and the conditions on this Order.

4.0 GENERAL APPROVAL CONDITIONS

4.1 The Cleaver-Brook boiler shall comply with all other requirements specified in all current Federal, State and Local air pollution laws and regulations, including, but not limited to, RCW 70.94 (Washington Clean Air Act), WAC 173-400 (General Regulations for Air Pollution Sources), WAC 173-460 (Controls for New Sources of Toxic Air Pollutants), 40 CFR Part 60, Subpart Dc (Standards of Performance for New Stationary Sources), and the YRCAA Regulation 1.

4.2 All plans, specifications or other information submitted to YRCAA and any further authorizations, approvals, or denials in relation to this project, shall be incorporated herein and made a part of the YRCAA file and this Order.

4.3 Nothing in this approval shall be construed as obviating compliance with any requirement(s) of law including those imposed pursuant to the Clean Air Washington Act, and rules and regulations thereunder. Any violation(s) of such rules and regulations are penalized in accordance with RCW 70.94.430 and YRCAA Regulation 1, Article 5, Compliance and Enforcement.

4.4 Authorization may be modified, suspended or revoked in whole or part for cause including, but not limited to, the following:

4.4.1 Violation of any terms or conditions of this authorization; or,

4.4.2 Obtaining this authorization by misrepresentation or failure to disclose fully all relevant facts.

4.5 The provisions of this authorization are severable and, if any provision of this authorization, or application of any provisions of this authorization to any circumstance, is held invalid, the application of such provision to their circumstances, and the remainder of this authorization, shall not be affected thereby.

4.6 The Permit requirements apply to the Facility owner and/or operator(s) and any contractor or subcontractor performing any activity authorized under this Order. Any person(s), including contractor(s) and/or subcontractor(s), not in compliance with the applicable requirements in this Order are in violation of State and local laws and subject to appropriate civil and criminal penalties. The Facility owner and/or operator, and all contractor(s) or subcontractor(s) are liable for the actions and violations of their employee(s). Any violation committed by a contractor or subcontractor shall be considered a violation by the Facility owner and/or operator, and is also a violation by the contractor and/or any subcontractor(s).

4.7 Laws, rules and regulations may be superseded or revised without notice. It is the Permittee's responsibility to stay current with laws rules and regulations governing their business and therefore is expected to comply with all new laws, rules and regulations immediately upon their effective date. New laws, rules and regulation updates will be incorporated into existing Orders or upon renewal of said Orders.

4.8 All air emissions from this Facility shall be in compliance with all air emission standards at all times. It is the responsibility of the owner to make sure that air emissions are within all known and promulgated laws, rules and regulations standards.

4.9 If, or whenever the Permittee wants to change the quantity of emissions set forth in this Order, another NSR must be filed with YRCAA before any change takes place and BACT requirements must be satisfied.

5.0 EMISSION LIMITS

5.1 Pursuant to WAC 173-400-113(2) determination, the Cleaver-Brook boiler shall use an Ultra-Low-NOx burner, as per the submitted materials with the NSR application and the specified emission limit.

5.2 Air emission from this operation is estimated to generate small PM_{10}, $PM_{2.5}$, CO, VOC's, NO_x, SO_x and others as shown in Appendix A. Table 2 below shows only the maximum allowable for these air emissions for quick reference:

Table. 2 Emission limitations

BACT Determination	Emission limitation (lb/MMBtu)				
	CO	NOx	PM_{10}	$PM_{2.5}$	VOC
Limit	0.0187	0.0105	0.0075	0.0075	0.0036

5.3 Emissions of NOx from the boiler shall not exceed nine parts per million by volume, dry and corrected to three percent oxygen (9 ppmvd @ 3% O_2) using NG fuel.

5.4 Emissions of CO from the boiler shall not exceed twenty five parts per million by volume, dry and corrected to three percent oxygen (25 ppmvd @ 3% O_2) using NG fuel.

6.0 MONITORING AND RECORDKEEPING REPORTING REQUIREMENTS

6.1 The Permittee shall record the annual amount of NG used, including the number of hours and dates, for the subject boiler and report it along with the plant-wide total in the annual registration submittal on forms provided by the Agency.

6.2 This Order and its conditions shall remain in effect in the event of any change in control of ownership or operation of the Facility. In the event of any such change in control of ownership or operation, the Permittee shall notify the succeeding owner of this Order and conditions and shall notify the YRCAA of the change by filing an "Ownership or Name Change" form within fifteen (15) days of that change. The form can be obtained or requested from YRCAA's office or the website.

6.3 Results of the source test requirements in this Order shall be submitted to the YRCAA within 30 days following the completion date of the test.

6.4 The final source test results must be reported to YRCAA in units of ppmvd, pounds per MMBtu and potential tons per year for each pollutant.

6.5 The Permittee shall keep all records including this Order on site. Records shall include, at minimum, the monthly number of hours of operation of all units, the NG usage, and the O&M items performed. Forms for recordkeeping must be designed by the Permittee and shall include the date and time of maintenance performed and the operator's name.

6.6 The required records, logs and a copy of the O&M plan for this Facility shall be kept on site and shall always be readily available, organized, accessible and be made available to the APCO of the YRCAA or his designated staff during inspections or upon request. The O&M plan shall be updated to reflect any changes in operating procedures and such changes shall be routinely be implemented.

6.7 All required records shall be kept and maintained on-site for the most previous five years from any current date.

6.8 Any application form, report, compliance certification, monthly record and the annual consumption report submitted to YRCAA pursuant to this Order must be signed by a responsible official or responsible official designee.

6.9 Total air emission for each air pollutant including HAPs/TAPs, number of hours of operation must be calculated and reported to YRCAA on an annual basis as specified in the annual registration provided by YRCAA to the Facility, as long as the Facility is not a title V source.

6.10 Pursuant to RCW 70.94.152, this Order shall be void without full payment of all actual YRCAA cost within thirty days after the issuance date.

Any person feeling aggrieved by this NSR Order of Approval may obtain review thereof by application, within thirty (30) days of receipt of this NSR order to the Pollution Control Hearings Board, P.O. Box 40903, Olympia, WA, 98504-0903. Concurrently, a copy of the application must be sent to the YRCAA, 329 N 1st St., Yakima, WA 98901. These procedures are consistent with the provisions of Chapter 43.21B RCW and the rules and regulations adopted thereunder.

DATED at Yakima, Washington this 23th day of October, 2017.

PREPARED BY:

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Appendix A

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Boiler: Cleaver Brook & Modeling results for NG
1000 Hp Steam Boiler (CBEX-E 700-1000-150ST)

Hours of operation: 8760
Natural gas usage: 40.18 MMBTU/hr NOx 1.09E-2 lb/mmbtu
CO 1.74E-2 lb/mmbtu

Emissions [TPY] = (Emission factor [lb/MMft^3]) x (Heat Input [MMBTU/hr] x (hours of operation [hr/yr]) x (fuel heating value [1ft3/1050Btu]) x (ton conversion [1 ton/2000 lb])

Modeling:

DATA		
Input	Value	Units
Stack height	29.4	ft
Inside diam	0.67	ft
ACFM (VF)	15703	acfm
gas exit temp	343	F

AERSCREEN Model Results		
Max @	*41*	meter
concentration (1 hour)	***93.05***	ug/m^3
(24-hr)	55.83	ug/m^4
(Annual)	9.305	ug/m^5

	Emission Factor	Heat Input	Emissions								
	Emission(E)	Heat Input									
Pollutants	#/MMft^3	MMBtu/Hr	Tons/Yr	lbs/year	*g/s*	*ug/m3*	*ASIL (ug/m3)/NAAQS*	averaging period	SQER (lb)		Model below ASIL
PM	**7.6**	40.18	1.2738	2547.5	***0.03659376***	***2.04***	***35***				**YES**
PM_{10}	7.6	40.18	1.2738	2547.5	*0.03659376*	*3.41*					
SO_2	0.6	40.18	0.1006	201.1	*0.002888981*	*0.27*	*660*	*hr*	1.45		YES
NOx (uncontrolled)	100	40.18	16.7599	33519.8	*0.48149684*	*44.80*	*470*	*hr*	1.03		YES
NOx (controlled)	5.25	40.18	0.2095	419.0	*0.00601871*	*0.56*	*470*	*hr*	*1.03*		YES
N_2O	0.64	40.18	0.1073	214.5	*0.00308158*	*0.29*					
TOC	11	40.18	1.8436	3687.2	*0.052964652*	*4.93*					
CO (uncontrolled)	84	40.18	14.0783	28156.7	*0.404457345*	*37.63*	*23000*	*hr*	50.4		YES
CO (controlled)	2.12	40.18	0.3553	710.6	*0.010207733*	*0.95*	*23000*	*hr*	50.4		YES
CO_2	120,000	40.18	20111.8998	40223799.6	*577.7962078*	*53763.94*					
Methane	2.3	40.18	0.3855	771.0	*0.011074427*	*1.03*					
VOC	5.5	40.18	0.9218	1843.6	*0.026482326*	*2.46*					
	Emission Factor	**Heat Input**	**Tons/Yr**	lbs/yr	*g/s*	*ug/m3*	ASIL (ug/m3)	averaging period	SQER		
2-methylnaphthalene	2.40E-05	40.18	4.02E-06	0.00804	1.16E-07						
3-methylchloranthrene	1.80E-06	40.18	3.02E-07	0.00060	8.69E-09	8.08E-08	1.59E-04	yr	0.0305	TAPs	YES
7,12-dimethylbenz(a)anthracene	1.60E-05	40.18	2.68E-06	0.00536	7.72E-08	7.18E-07	1.41E-05	yr	0.00271	TAPs	YES
acenaphthene	1.80E-06	40.18	3.02E-07								
acenaphthylene	1.80E-06	40.18	3.02E-07								
anthracene	2.40E-06	40.18	4.02E-07								
Arsenic	2.00E-04	40.18	3.35E-05	0.067	9.65E-07	8.98E-06	3.03E-04	yr	0.0581	TAPs	YES
Barium	4.40E-03	40.18	7.37E-04								
Benzene	2.10E-03	40.18	3.52E-04	0.704	1.01E-05	9.43E-05	3.45E-02	yr	6.62	HAPS	YES
Benzo(a)anthracene	1.80E-06	40.18	3.02E-07	6.03E-04	8.69E-09	8.08E-08	9.09E-03	yr	1.74	TAPs	YES
Benzo(a)pyrene	1.20E-06	40.18	2.01E-07	4.02E-04	5.79E-09	5.39E-08	9.09E-03	yr	0.174	TAPs	YES
Benzo(b)fluoranthene	1.80E-06	40.18	3.02E-07	6.03E-04	8.69E-09	8.08E-08	9.09E-03	yr	1.74	TAPs	YES
benzo(ghi)perylene	1.20E-06	40.18	2.01E-07								
Benzo(k)fluoranthene	1.80E-06	40.18	3.02E-07	6.03E-04	8.69E-09	8.08E-08	9.09E-03	yr	1.74	TAPs	YES
Beryllium	1.20E-05	40.18	2.01E-06	4.02E-03	5.79E-08	5.39E-07	4.17E-04	yr	0.08	TAPs	YES
Cadmium	1.10E-03	40.18	1.84E-04	3.69E-01	5.31E-06	4.94E-05	2.38E-04	yr	0.0457	TAPs	YES
Chromium	1.40E-03	40.18	2.35E-04	0.469277662	6.76E-06	6.29E-05	6.67E-06	yr	0.00128	TAPs	NO
chrysene	1.80E-06	40.18	3.02E-07								
Cobalt	8.40E-05	40.18	1.41E-05	2.82E-02	4.05E-07	2.26E-05	1.00E-01	24-hr	0.013	TAPs	YES
Copper	8.50E-04	40.18	1.42E-04	2.85E-01	4.10E-06	3.82E-04	1.00E+02	1-hr	0.219	TAPs	YES
Dibenzo(a,h)anthracene	1.20E-06	40.18	2.01E-07	4.02E-04	5.79E-09	5.39E-08	0.001	yr	0.16	TAPs	YES
Dichlorobenzene	1.20E-03	40.18	2.01E-04	4.02E-01	5.79E-06	9.09E-03	0.091	yr	17.4	HAPs	YES
fluoranthene	3.00E-06	40.18	5.03E-07								
fluorene	2.80E-06	40.18	4.69E-07								
Formaldehyde	7.50E-02	40.18	1.26E-02	25.14	3.62E-04	3.37E-03	0.17	yr	32	HAPs	YES
Indeno(123-cd)pyrene	1.80E-06	40.18	3.02E-07								
Lead	0.0005	40.18	8.38E-05	1.68E-01	2.41E-06	2.25E-05	0.083	yr		NAAQS	YES
Manganese	3.80E-04	40.18	6.37E-05	1.27E-01	1.83E-06	1.02E-04	0.04000	24-hr	0.00526	TAPs	YES
Mercury	2.60E-04	40.18	4.36E-05	8.72E-02	1.25E-06	7.00E-05	0.09000	24-hr	0.0118	TAPs	YES
Molybdemum	1.10E-03	40.18	1.84E-04								
Naphthalene	6.10E-04	40.18	1.02E-04	2.04E-01	2.94E-06	2.74E-05	0.029	yr	5.64	HAPs	YES
Nickel	2.10E-03	40.18	3.52E-04								
Phenanathrene	1.70E-05	40.18	2.85E-06								
Pyrene	5.00E-06	40.18	8.38E-07								
Selenium	2.40E-05	40.18	4.02E-06	8.04E-03	1.16E-07	6.47E-06	20.000000	24-hr	2.63	TAPs	YES
Toluene	3.40E-03	40.18	5.70E-04	1.14E+00	1.64E-05	9.16E-04	5000.000	24-hr	657	HAPS	YES
Vanadium	2.30E-03	40.18	3.85E-04	7.71E-01	1.11E-05	6.20E-04	0.200000	24-hr	0.0263	TAPs	YES
Zinc	2.90E-02	40.18	4.86E-03								

NO_X EF (lb/MMscf) = NO_X concentration (ppm) × 1.194×10^{-7} (lb/scf)/(ppm-NO_X) × 20.9%/(20.9%-3%) × 10^6

CO EF (lb/MMscf) = CO concentration (ppm) × 1.660×10^{-7} (lb/scf)/(ppm-CO) × 28.0101 (g/mol CO) / 64.066 (g/mol CO) × 20.9%/(20.9%-3%) × $10^{\wedge 6}$

Appendix A
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Boiler: Cleaver Brook & Modeling results for NG
1000 Hp Steam Boiler (CBEX-E 700-1000-150ST)

Calculates the annual PTE for natural gas use fuel
N.G. TPY =(mm BTU per hour *8760*(1ft3/1050Btu)*(# Emissions/1.0 mmft3)x 1 ton/2000 lb

	Pollutants	Emission(E)		Heat Input	Emissions		
		#/MMft**3		MMBtu/Hr	Tons/yr	1bs/year	1bs/hr
		Uncontrolled Emissions					
PM		7.6		40.18	1.274E+00	2.55E+03	3.10E-01
PM10		7.6		40.18	1.274E+00	2.55E+03	3.10E-01
SO2		0.6		40.18	1.006E-01	2.01E+02	2.45E-02
NOx~ 9ppm	*lb/1E6 scf	1.25	1.0144 Ibs/hr	40.18	2.095E-01	4.19E+02	5.10E-02
N2O		2.2		40.18	3.687E-01	7.37E+02	8.98E-02
TOC		11		40.18	1.844E+00	3.69E+03	4.49E-01
CO~25ppm	*lb/1E6 scf	2.12	0.87 Ibs/hr	40.18	3.553E-01	7.11E+02	8.65E-02
Methane		2.3		40.18	3.855E-01	7.71E+02	9.39E-02
VOC		5.5		40.18	9.218E-01	1.84E+03	2.24E-01
Lead		0.0005		40.18	8.380E-05	1.68E-01	2.04E-05
Formaldehyde		7.50E-002		40.18	1.257E-02	2.51E+01	3.06E-03
Benzo(a)anthracene		1.80E-006		40.18	3.017E-07	6.03E-04	7.35E-08
Benzo(a)pyrene		1.20E-006		40.18	2.011E-07	4.02E-04	4.90E-08
Benzo(b)fluoranthene		1.80E-006		40.18	3.017E-07	6.03E-04	7.35E-08
Benzo(k)fluoranthene		1.80E-006		40.18	3.017E-07	6.03E-04	7.35E-08
Dibenzo(a,h)anthracene		1.20E-006		40.18	2.011E-07	4.02E-04	4.90E-08
2-Methylnaphthalene		2.40E-005		40.18	4.022E-06	8.04E-03	9.80E-07
Benzene		2.10E-003		40.18	3.520E-04	7.04E-01	8.57E-05
Butane		2.10E+000		40.18	3.520E-01	7.04E+02	8.57E-02
Dischlorobenzenne		1.20E-003		40.18	2.011E-04	4.02E-01	4.90E-05
Ethane		3.10E+000		40.18	5.196E-01	1.04E+03	1.27E-01
Fluoranthene		3.00E-006		40.18	5.028E-07	1.01E-03	1.22E-07
Fluorene		2.80E-006		40.18	4.693E-07	9.39E-04	1.14E-07
Hexane		1.80E+000		40.18	3.017E-01	6.03E+02	7.35E-02
Naphthalene		6.10E-004		40.18	1.022E-04	2.04E-01	2.49E-05
Pentane		2.60E+000		40.18	4.358E-01	8.72E+02	1.06E-01
Phenanathrene		1.70E-005		40.18	2.849E-06	5.70E-03	6.94E-07
Propane		1.60E+000		40.18	2.682E-01	5.36E+02	6.53E-02
Pyrene		5.00E-006		40.18	8.380E-07	1.68E-03	2.04E-07
Toluene		3.40E-003		40.18	5.698E-04	1.14E+00	1.39E-04
Arsenic		2.00E-004		40.18	3.352E-05	6.70E-02	8.16E-06
Barium		4.40E-003		40.18	7.374E-04	1.47E+00	1.80E-04
Beryllium		1.20E-005		40.18	2.011E-06	4.02E-03	4.90E-07
Cadmium		1.10E-003		40.18	1.844E-04	3.69E-01	4.49E-05
Chromium		1.40E-003		40.18	2.346E-04	4.69E-01	5.71E-05
Cobalt		8.40E-005		40.18	1.408E-05	2.82E-02	3.43E-06
Copper		8.50E-004		40.18	1.425E-04	2.85E-01	3.47E-05
Manganese		3.80E-004		40.18	6.369E-05	1.27E-01	1.55E-05
Mercury		2.60E-004		40.18	4.358E-05	8.72E-02	1.06E-05
Molybdenum		1.10E-003		40.18	1.844E-04	3.69E-01	4.49E-05
Nickel		2.10E-003		40.18	3.520E-04	7.04E-01	8.57E-05
Selenium		2.40E-005		40.18	4.022E-06	8.04E-03	9.80E-07
Vanadium		2.30E-003		40.18	3.855E-04	7.71E-01	9.39E-05
Zinc		2.90E-002		40.18	4.860E-03	9.72E+00	1.18E-03
				Sum HAPs	1.886E+00	Not including Lead and Formaldehyde	

*AP-42 Tab. 1.4-1,2: 7/98

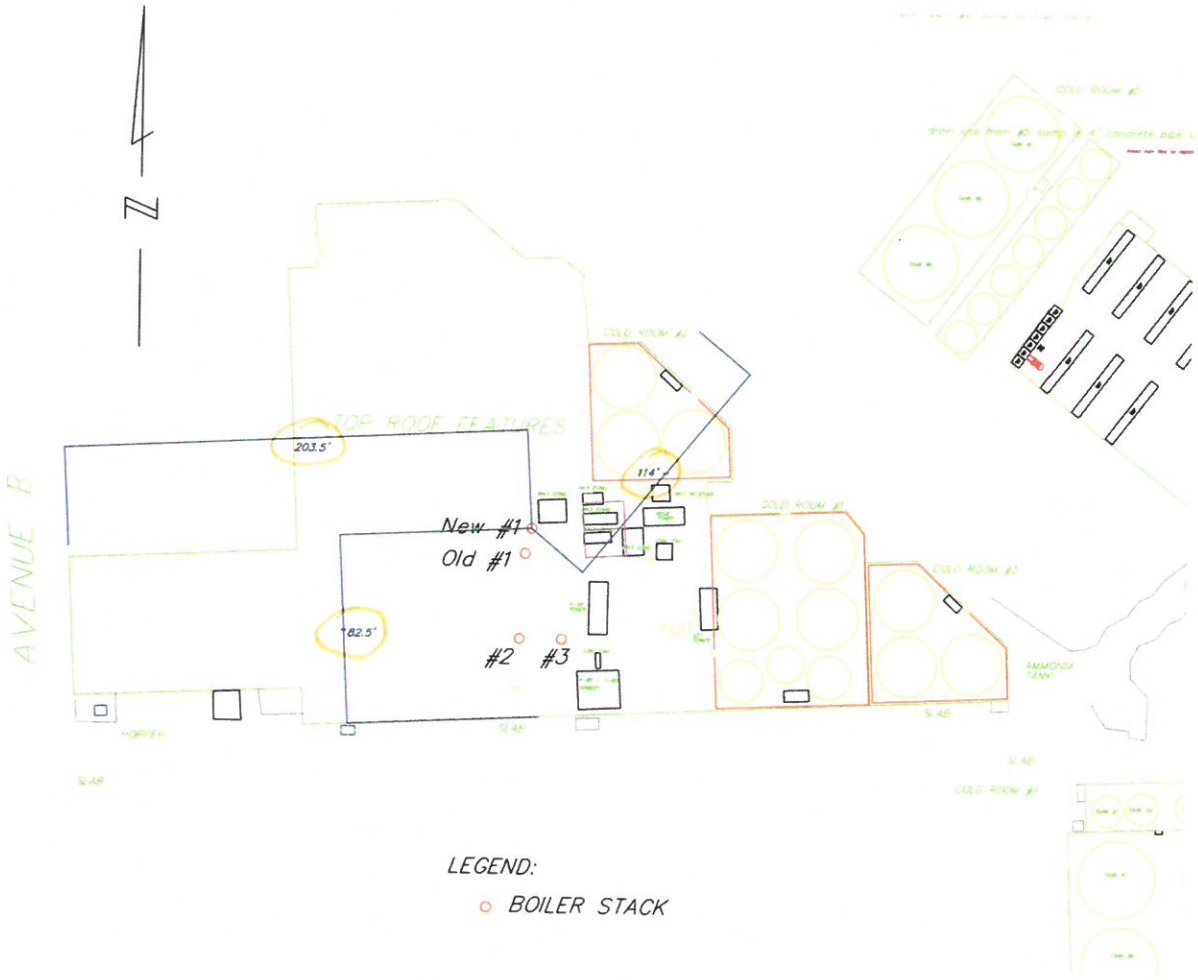

Figure 1. The location of stacks for old Boiler #1 and #2, and the new boiler and existing Boiler #3

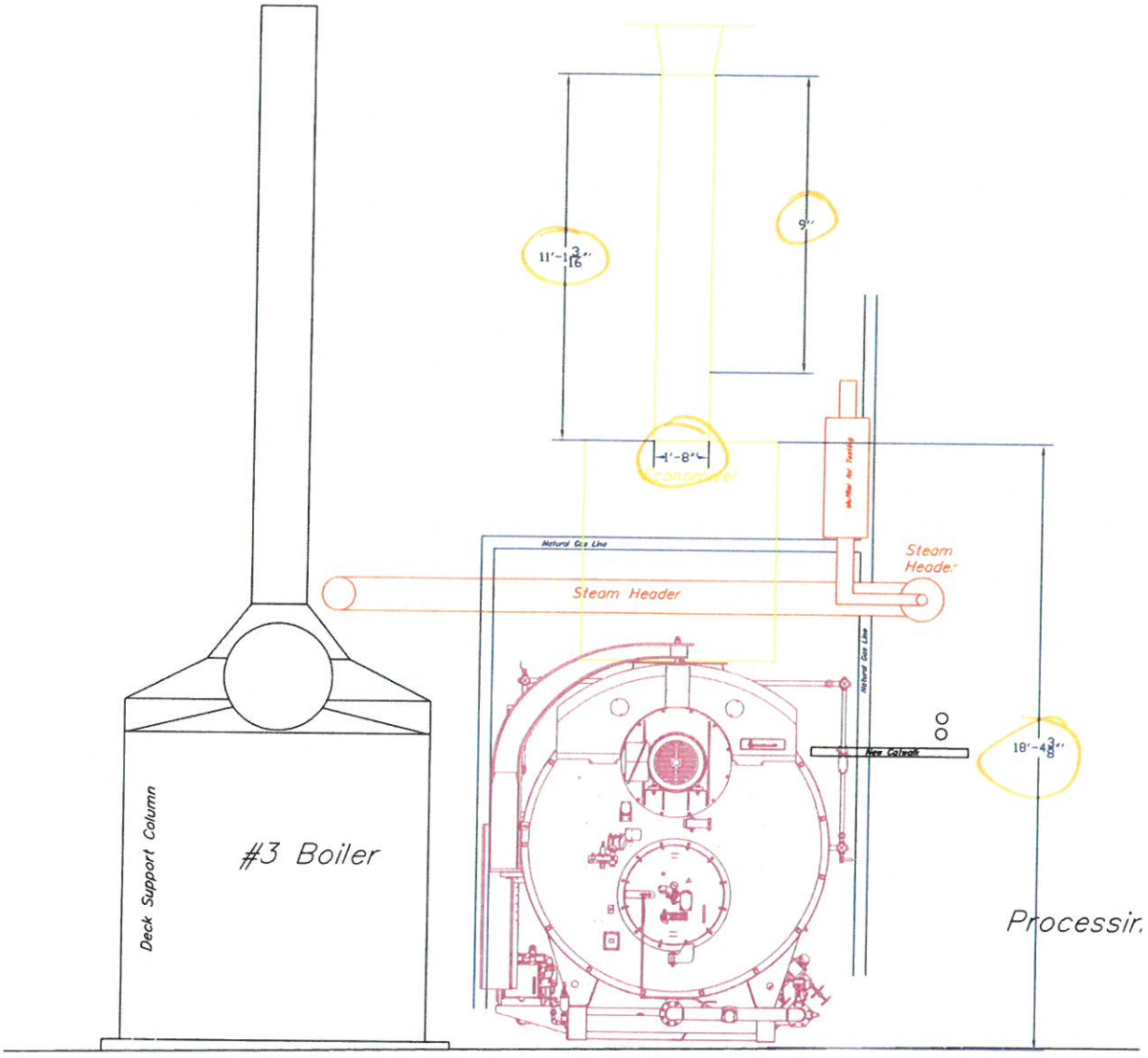

Figure 2. The drawing of a new 1000 Hp boiler and Boiler #3