Hitachi Zosen INOVA

PROPOSAL
for
ORGANIC MATERIALS PROCESSING SERVICES
prepared for

SONOMA COUNTY
Waste Management Agency

Hitachi Zosen
INOVA

Proposal for Organic Materials Processing

prepared for

Sonoma County Waste Management Authority

Hitachi Zosen INOVA

January 15, 2018

Patrick Carter
Executive Director
Sonoma County Waste Management Agency
2300 County Center Drive, B-100
Santa Rosa, CA 95403

Re. Cover Letter– Request for Proposals for Organic Materials Processing Services

Dear Mr. Carter:

Hitachi Zosen Inova USA LLC (HZI) is pleased to submit the following proposal to the Sonoma County Waste Management Agency (SCWMA or Agency) in response to the Request for Proposal for Organic Materials Processing Services.

The Project Team, for purposes of this RFP, has the capabilities and corporate characteristics described herein. If awarded the project, HZI would finalize negotiations on a land lease/beneficial use agreement with the City of Santa Rosa (City), based on the pre-approval and Letter of Intent to Negotiate, received from the City on December 7th, 2017. HZI also would work diligently with SCWMA to finalize the services agreement.

HZI is pleased to present a Project Team that represents the most experienced and talented firms in design, engineering, and construction for the delivery of an organics processing facility. Combined, this group represents the years of experience that ensure a successful project from start to finish and beyond. The Project Team consists of Hitachi Zosen Inova USA, LLC, Pacific Organics and GHD. With this Project Team in place to apply their skills and knowledge to every aspect of the proposed facility, from conception through to operation, the Project Team ensures an on-time, on-budget project that fulfills all the requirements and expectations of SCWMA.

Furthermore it should be noted that HZI is currently developing and constructing an almost identical project in cooperation with the San Luis Obispo County Integrated Waste Management Authority (IWMA) and the local waste hauler, Waste Connections in San Luis Obispo, CA and will be able to utilize the same experienced team and lessons learned to ensure the proper success of the SCWMA Organic Materials Processing project.

HZI is a global technology leader for energy and material recovery from municipal solid waste (MSW), refuse derived fuel and organic waste. HZI acts as engineering, procurement and construction (EPC) contractor, delivering complete, turnkey plants. HZI's solutions are based on efficient and environmentally sound in-house technology, are thoroughly tested, can be flexibly adapted to user requirements and cover the entire plant life cycle. HZI's portfolio is rounded off with strong operations and maintenance (O&M) capabilities. HZI's customers range from municipalities, experienced waste management companies to up and coming developers in new markets worldwide. With HZI's

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Kompogas® Technology in use in over 80 facilities all over the world, HZI offers more than 25 years of experience in this most proven and reliable process as a global market leader.

HZI has experience in developing and servicing projects such as the County's solicitation, utilizing the Kompogas Anaerobic Digestion technology. HZI will include all of the relevant disciplines such as the role as complete EPC provider (develop, design, engineer, procure and construct), owner and operator of the proposed facility.

Communications regarding this response should be directed to:

Thomas Gratz - Sales Manager US
Hitachi Zosen Inova, USA LLC
3740 Davinci Court, Suite 250
Norcross, GA 30092
Phone : 630-862-1176
E-mail: thomas.gratz@hz-inova.com

As requested in the RFP, the Project Team wishes to confirm the following:

- The project partners certify that they have examined understood and agreed to the draft agreement except as otherwise stated in the RFP submission.
- The project partners warrant that the requirements of the Agreement as described in the RFP document, its enclosures, and all addenda, by listing all addenda and dates received, and the eight documents as listed on page 11 of the RFP have been thoroughly reviewed and the project team has conducted all due diligence necessary to confirm material facts upon which the proposal is based.
- The project partners acknowledge the validity of the proposal contents including proposed tipping and pricing for a period of 260 days.
- The project partners acknowledge that the project team will enter into the Agreement with SCWMA if selected as the Agency's service provider.
- The project team has appended to the cover letter, the following:
    - Proposal Bond
    - Performance Bond Commitment Letter
    - Receipt of Signed Addenda
    - Table of Contents
    - Executive Summary.

Should the SCWMA or any other stakeholders have any questions or have interest to visit our San Luis Obispo facility, to better understand our approach, please let us know.

Sincerely,

Markus Stangl
CEO
Hitachi Zosen Inova USA, LLC

Mike Canova
Treasurer & Secretary
Hitachi Zosen Inova USA, LLC

Hitachi Zosen

PROPOSAL BOND

Hitachi Zosen

PERFORMANCE BOND

COMMITMENT LETTER

Hitachi Zosen

RECEIPT
of
SIGNED ADDENDA

THEREFORE: All Applicants are required to sign this page of this Addendum No. 1, and shall submit a signed copy of this page with their Proposal package.

Thank you for your participation,

Sonoma County Waste Management Agency
Patrick Carter
Executive Director

ADDENDUM NO. 1 DATE: July 7, 2017

COMPANY / AGENCY NAME: Hitachi Zosen Inova USA, LLC

COMPANY ADDRESS: 3740 Davinci Ct, Ste 250, Norcross, GA 30092

REPRESENTATIVE'S NAME: Thomas Gratz

SIGNATURE:

DATE: 1-12-18

All Applicants are required to sign this page of this Addendum No. 2, and shall submit a signed copy of this page with their Proposal package.

Thank you for your participation,

Sonoma County Waste Management Agency
Patrick Carter
Executive Director

ADDENDUM NO. 2 DATE: July 27, 2017

COMPANY / AGENCY NAME: Hitachi Zosen Inova USA, LLC

COMPANY ADDRESS: 3740 Davinci Ct, Ste 250, Norcross, GA 30092

REPRESENTATIVE'S NAME: Thomas Gratz

SIGNATURE:

DATE: 1-12-18

All Applicants are required to sign this page of this Addendum No. 3, and shall submit a signed copy of this page with their Proposal package.

Thank you for your participation,

Sonoma County Waste Management Agency
Patrick Carter
Executive Director

ADDENDUM NO. 3 DATE: September 22, 2017

COMPANY / AGENCY NAME: Hitachi Zosen Inova USA, LLC

COMPANY ADDRESS: 3740 Davinci Ct, Ste 250, Norcross, GA 30092

REPRESENTATIVE'S NAME: Thomas Gratz

SIGNATURE:

DATE: 1-12-18

All Applicants are required to sign this page of this Addendum No. 4, and shall submit a signed copy of this page with their Proposal package.

Thank you for your participation,

Sonoma County Waste Management Agency
Patrick Carter
Executive Director

ADDENDUM NO. 4 DATE: November 21, 2017

COMPANY / AGENCY NAME: Hitachi Zosen Inova, USA, LLC

COMPANY ADDRESS: 3740 Davinci Ct, Ste 250, Norcross, GA 30092

REPRESENTATIVE'S NAME: Thomas F. Gratz

SIGNATURE:

DATE: 1-12-18

Hitachi Zosen INOVA

Executive Summary

Hitachi Zosen Inova, U.S.A. LLC (HZI) is honored to participate in the SCWMA Request for Proposal for Organic Materials Processing Services.
With HZI extensive experience in developing and executing Waste to Energy and Anaerobic Digestion projects worldwide, we can offer SCWMA a proven, long term solution for processing organics materials, achieving the County's recycling and diversion goals, producing renewable energy and creating valuable soil amendments for local use. With over 80 years of experience we are a trusted partner to our clients and stakeholders all over the world.

Based on HZI's recent experience with developing, permitting and constructing a similar facility in San Luis Obispo, CA, we can lead this project to successful completion and offer options to SCWMA that are economically beneficial, environmentally sound and will be a benefit to the rate payers of the region.

HZI is a global technology leader for energy and material recovery from municipal solid waste (MSW), refuse derived fuel and organic waste. HZI acts as engineering, procurement and construction (EPC) contractor, delivering complete, turnkey plants. HZI's solutions are based on efficient and environmentally sound in-house technology, are thoroughly tested, can be flexibly adapted to user requirements and cover the entire plant life cycle. HZI's portfolio is rounded off with strong operations and maintenance (O&M) capabilities.

HZI's customers range from municipalities, experienced waste management companies to up and coming developers in markets worldwide. With HZI's Kompogas® Technology in use in over 80 facilities all over the world, we offer more than 25 years of experience in this most proven and reliable process as a global market leader.

HZI has experience in developing and servicing projects such as the SCWMA's solicitation, utilizing the Kompogas® Anaerobic Digestion technology and can include all the relevant disciplines from finance, complete EPC provider (develop, design, engineer, procure and construct) to operation and maintenance.

The patented Kompogas® high solids anaerobic digestion process is based on continuous dry fermentation of organic feedstock using a horizontal plug-flow digester, operated at thermophilic temperatures. This proven process ensures that organic substrate is fully converted to biogas and that digestate is completely sanitized and free of pathogens.

With HZI's North American Headquarters located in Norcross, GA and in-state locations in San Luis Obispo, CA and Sacramento, CA we can offer a thorough understanding of the California marketplace and legislative environment, paving the way for a smooth and on-time delivery of the proposed long term organics management solution.

Our operations support team located in San Luis Obispo, CA will ensure trouble free and continuous operation and provide maintenance for the facility.

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HZI, as part of the global Hitachi Zosen Corporation conglomerate, brings the necessary financial strength and the financial qualifications to reliably support the SCWMA project during the development, construction and operations phase and perform the work described in the RFP.

Proposal:

HZI proposes a long term solution (minimum 20 years) based on a 70,000 tons per year Kompogas High Solids Dry Anaerobic Digestion facility, fully enclosed and odor controlled and plans to utilize the produced Biogas in the CHPs of the nearby Santa Rosa Waste Water Treatment plant.

The proposed solution is based on $89.- USD per ton processing rate for the organic material. Adjustments to the rate will be considered as outlined in Exhibit A of the Long Term SCWMA Agreement for Organic Materials Processing Services.

HZI has included a compost giveaway program in line with SCWMA's request in the RFP. HZI will make available three hundred and fifty (350) cubic yards of compost twice per year at no additional cost to the SCWMA or the ratepayers for use by residents and Member Agency(ies), in parks and facility landscaping.

HZI has foreseen a training and education center as part of the overall facility to invite schools, associations and other interested parties to tour the site and learn about the diversion of organic material from landfill through Anaerobic Digestion and the subsequent production of Renewable Energy and Green House Gas reduction.

Proposed Tentative Time Schedule:

Key Milestones and the proposed tentative schedule of the project are based on an expected project award date with Notice to Proceed (NTP) on July 2nd, 2018.

Depending on the permitting process and required approvals, a start of construction date is anticipated by August 1st, 2019.

Expected begin of hot commissioning with start of feedstock receiving is expected on December 3rd, 2020 with Commercial Operation starting on March 1st, 2021.

Thank you for allowing HZI to provide Sonoma County Waste Management Authority the enclosed proposal to their RFP.

Sincerely,

Markus Stangl, CEO

2. Qualifications

2.1 Team Organizational Chart

Hitachi Zosen Inova, U.S.A. LLC (HZI) will be the project team lead. HZI has extensive experience to lead this project to a very successful completion and offer options to SCWMA that are economically beneficial, environmentally sound and will be a benefit to the rate payers of the region. It will work together along with the other members of the Project Team and additional vendors as needed to execute this project.

It shall be stated at this point that HZI has in the past year successfully permitted and commenced construction of an almost identical organics processing facility in San Luis Obispo County, CA (SLO Project). The SLO project is being executed in close collaboration with the local San Luis Obispo County Integrated Waste Management Authority (IWMA) and local waste haulers. All necessary permits have been granted and the project has been awarded grant funding from CalRecycle and the California Energy Commission.

All members of the HZI project team as proposed for this submission have been integrally involved in the SLO project and will be assigned to the SCWMA Organics Management Project in case of award.

2.2 Key Staff Persons

2.2.1 Hitachi Zosen Inova USA, LLC

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HZI is a global technology leader for energy and material recovery from municipal solid waste (MSW), refuse derived fuel and organic waste. HZI acts as engineering, procurement and construction (EPC) contractor, delivering complete, turnkey plants. HZI's solutions are based on efficient and environmentally sound in-house technology, are thoroughly tested, can be flexibly adapted to user requirements and cover the entire plant life cycle. HZI's portfolio is rounded off with strong operations and maintenance (O&M) capabilities, as required. HZI's customers range from municipalities, experienced waste management companies to up and coming developers in new markets worldwide. With HZI's Kompogas® Technology in use in over 80 facilities all over the world, HZI offers more than 25 years of experience in this most proven and reliable process as a global market leader.

HZI has experience in developing and servicing projects such as the County's solicitation, utilizing the Kompogas Anaerobic Digestion technology can include some or all of the relevant disciplines such as a

role as complete EPC provider (develop, design, engineer, procure and construct) to operation and maintenance provider.

2.2.1.1 Staff Responsibilities

MARKUS STANGL is HZI's CEO and is responsible for all day to day tasks and general oversight of the US operations. He will be directly involved in all decisions related to the development and execution for this project.

THOMAS GRATZ is the Sales Manager US and with experience in developing similar projects, Mr. Gratz will support and coordinate the team's efforts to ensure the project's success.

WILLIAM SKINNER as Director of Operations & Maintenance AD will be actively involved in all permitting and environmental work and will work closely with the City and SCWMA through the re-zoning and permitting process. Mr. Skinner will also head up all matters related to the Conditional Use Permit, California Environmental Quality Act (CEQA), CalRecycle permits, air permits and will work closely with the sub-consultants identified here. He also will be the lead with all building permits as the project progresses.

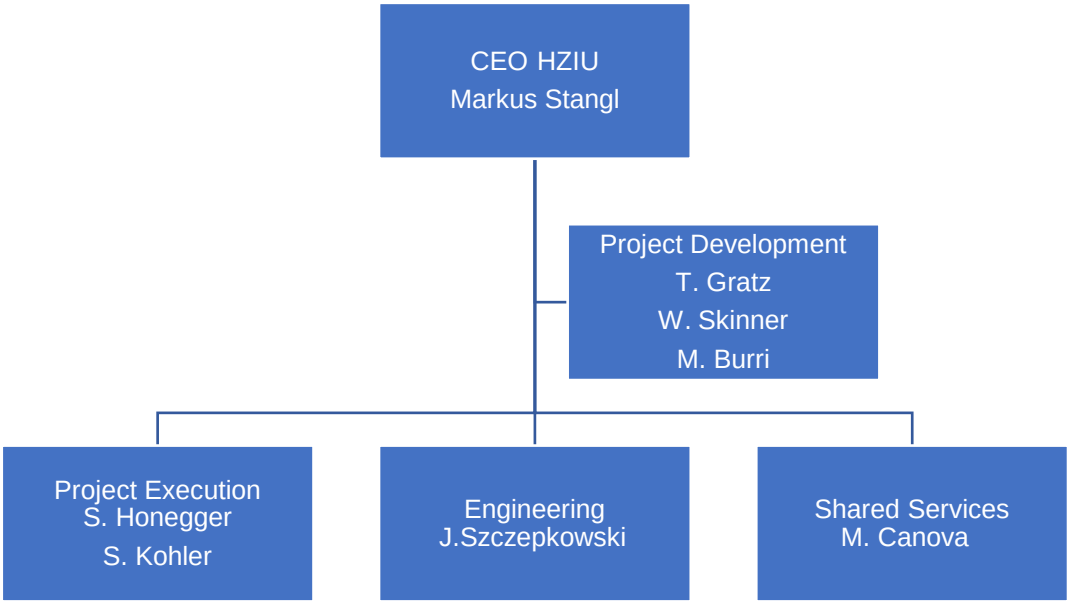
MARKUS BURRI is a Senior Process Engineer and has been involved in the biogas industry with Kompogas for over 5 years. His core responsibilities have been Anaerobic Digestion plant design, engineering and commissioning. In his current positon as Proposal Manager for HZI he leads the design and cost estimate for Anaerobic Digestion plants.

JOE SZCZEPKOWSKI is the Director of Engineering for HZI and will lead his team members in the design and implementation of the HZI Kompogas facility. Mr. Szczepkowski is currently completing the engineering on the HZI Kompogas facility located in San Luis Obispo, so is very familiar with California requirements; seismic, fire, and construction. This most recent experience further lends itself to a successful project implementation and completion in Santa Rosa.

STEPHAN KOHLER as Project Manager will work directly with Mr. Stangl in the implementation of the project schedule as it relates to construction and coordination following all permitting and environmental activities.

SEAN HONEGGER in his position of Director of Civil & Construction will be in charge of all construction activities as the project progresses. Mr. Honegger brings years of construction experience to the project and has built many projects if similar complexity and size in California.

MIKE CANOVA is the Secretary/Treasurer for HZI, and is responsible for all Human Resources for the company. Mr. Canova will ensure all required bonding is in place, necessary financial requests/requirements are taken care of in a timely manner and any other matters related to insurance or financial posting are handled expeditiously.



2.3 References

As Appendix C, HZI is submitting their complete worldwide reference listing of all Kompogas Anaerobic Digestion projects. Detailed references are as follows.

2.3.1 REFERENCE #1 – SAN LUIS OBISPO COUNTY AD PROJECT

Reference #1 (San Luis Obispo) is still under construction, all of the permits have been obtained, demonstrating the ability to permit this project under similar regulatory conditions. See below for more details of these projects.

Project Name	**San Luis Obispo County Anaerobic Digestion Project**
Location	4338 Old Santa Fe Road San Luis Obispo, CA
Owner/Operator	HZIU Kompogas SLO, Inc.
Status	Under Construction, Expected startup Q 1 / 2018

Project Name	San Luis Obispo County Anaerobic Digestion Project
Description of Services	 The facility will process up to 36,500 tons of Source Separated Organics and Green Waste from the county's residential collection program as well as Fats, Oils, and Greases (FOG) utilizing the Kompogas High Solids Anaerobic Digestion (HSAD) technology. The resulting biogas will be utilized in an onsite Combines Heat and Power (CHP) unit, to produce renewable energy in form of electricity that will be exported to the utility power grid.
Development	• HZI has developed this project on a Finance, Design, Build, Own, Operate (FDBOO) basis • Facility utilizes the proven HZI own Kompogas High Solids Technology • HZI has negotiated feedstock contract with the local waste hauler to secure a long term feedstock agreement • HZI in conjunction with Oasis Associates has applied for and successfully obtained all necessary permits for construction and operation • HZI has negotiated and secured a long term Power Purchase Agreement with the Pacific Gas and Electric • The facility has been qualified for the 30 % Investment Tax Credit program • HZI in conjunction with The Grant Farm has applied for and successfully been awarded two grants from CalRecycle and CEC EPIC totaling 8 MM USD. • HZI has secured both, equity and debt financing for the project
Description of Facility	*Facility specifications:* • Feedstock: Source separated Organics and Green Waste from residential collection program, commercial food waste collection and FOG. • Proven Kompogas High Solids Anaerobic Digestion Technology • Design Capacity: 36,500 tons/year Energy Production: 835 kW installed capacity • Soil Amendment: 13,000 tons/year to local agriculture • Pre-treatment of feedstock via slow moving shredder, mechanical separation via star sieve and metals removal. • Thermophilic process technology, ensuring pathogen free digestate by products • Digestate resulting from the anaerobic digestion process is dewatered via HZI's own KOMPRESS dewatering technology and separated into solids and liquid. • Solid digestate will be aerated in specially designed, indoor composting boxes to control

Project Name	San Luis Obispo County Anaerobic Digestion Project
	odors and marketed as nutrient rich soil amendment to local agriculture • Liquid digestate will be marketed as nutrient rich liquid soil amendment for local agriculture. • Facility control, monitoring, and performance tracking is accomplished via a supervisory control and data acquisition (SCADA) system.
Construction	Construction began December 2016, expected substantial completion and startup in April 2018
Operations	HZIU Kompogas SLO INC, a wholly owned subsidiary of HZI, will own and operate the facility based on the extensive experience from operations of European facilities. The facility will be staffed by three fulltime employees.
Permitting & Regulatory Compliance	Successfully obtained all necessary environmental, building, air and operating permits and approvals from local, regional and state authorities.
Odor Control	All processing at the facility will be enclosed within negative air pressure process buildings. Odor control will be handled by a state of the art air handling system with approximately 4 air-changes per hour. The digester itself is a completely closed system, as the process operates under anaerobic conditions, i.e. in the absence of oxygen. Therefore, no emissions are released into the surrounding environment by the digestion plant. Waste air collected from the process buildings is moistened with water by means of a special nozzle system operated with compressed air. Reaching humidity levels of 95% guarantees an optimal operation of the subsequent biofilter, requiring minimal maintenance.

2.3.2 REFERENCE #2 – WINTERTHUR AD PROJECT

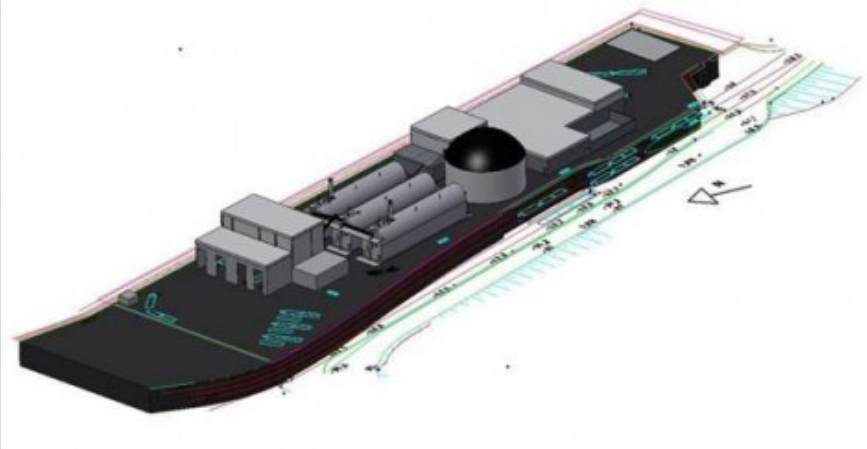
Project Name	Winterthur AD Project
Location	City of Winterthur Switzerland
Owner/Operator	Kompogas Winterthur AG
Status	Operating since 2014

Project Name	Winterthur AD Project
Description of Services	 The facility processes 23,000 metric tonnes of Source Separated Organics and Green Waste from the City of Winterthur's residential "Organics Bin" collection program. The plant utilizes the Kompogas High Solids Anaerobic Digestion (HSAD) technology with a PF 1500 digester. The resulting biogas is upgraded utilizing the HZI own BioMethan upgrading technology and the resulting Renewable Natural Gas (RNG) is exported to the utility gas grid.
Development	• HZI has been an integral part in development of this facility, being heavily involved in permitting and acting as planning, construction and commissioning entity of the system. • Facility utilizes one PF 1500 Kompogas Digester based on the proven HZI owned High Solids Technology • Resulting biogas is upgraded to Renewable Natural Gas utilizing the HZI BioMethan Amine Scrubbing technology
Description of Facility	*Facility specifications:* • Feedstock: Source Separated Organics and Green Waste from residential collection program • Proven Kompogas High Solids Anaerobic Digestion Technology • Design Capacity: 23,000 tonnes/year • Energy Production: 2,100,000 Nm3 of biogas per year • RNG Exported to the grid: 1.050,000 Nm3 per year • Compost: 10,000 tonnes/year to local agriculture • Liquid Fertilizer: 10,000 tonnes/year to local agriculture • Pre-treatment of feedstock via slow moving shredder, mechanical separation via star sieve and metals removal. • Thermophilic process technology, ensuring pathogen free digestate by product • Digestate resulting from the anaerobic digestion process is dewatered via HZIU's own KOMPRESS dewatering technology and separated into solids and liquid. • Solid digestate is aerated in aeration hall to control odors and marketed as nutrient rich soil amendment to local agriculture • Liquid digestate is marketed as nutrient rich liquid soil amendment for local

Project Name	Winterthur AD Project
	agriculture. • Facility control, monitoring, and performance tracking is accomplished via a supervisory control and data acquisition (SCADA) system.
Construction	HZI acted as EPC for turnkey system with commissioning in early 2014
Operations	Kompogas Winterthur AG, is operating the facility based on the extensive experience from operations of European facilities. The facility is staffed by four fulltime employees.
Permitting & Regulatory Compliance	HZI acted as support to Kompogas Winterthur AG in obtaining all necessary environmental, building, air and operating permits and approvals from local, regional and national authorities.
Odor Control	All processing at the facility are enclosed within the negative air pressure process building. Odor control is handled by a state of the art air handling system with approximately 6 to 8 air-changes per hour. The digester itself is a completely closed system, as the process operates under anaerobic conditions, i.e. in the absence of oxygen. Therefore, no emissions are released into the surrounding environment by the digestion plant. Waste air collected from the process buildings is moistened with water by means of a special nozzle system operated with compressed air. Reaching humidity levels of 95% guarantees an optimal operation of the subsequent biofilter, requiring minimal maintenance.

2.3.3 REFERENCE #3 – HOEGBYTORP AD PROJECT

Project Name	Hoegbytorp AD Project
Location	Hoegbytorp Sweden
Owner/Operator	E.ON Biofor Sverige AB
Status	Currently under construction, operations to commence Q1 2019

Description of Services	 As part of the implementation of Sweden's new energy policy, HZI is building Scandinavia's first Kompogas facility near Stockholm, Sweden. The installation with scheduled completion of construction in early 2019 will take organic waste from the local area and convert it into biogas and high grade compost, making a valuable contribution to efforts to harness renewable energy resources and close the material cycle.
Development	• HZI has been an integral part in development of this facility, being heavily involved in permitting and acting as planning, construction and commissioning entity of the system. • Facility utilizes three PF 2100 Kompogas Digesters based on the proven HZI owned High Solids Technology • Resulting biogas is upgraded to Renewable Natural Gas utilizing the HZI BioMethan Amine Scrubbing technology
Description of Facility	*Facility specifications:* • Feedstock: Source Separated Organics and Green Waste from residential collection program • Proven Kompogas High Solids Anaerobic Digestion Technology • Design Capacity: 83,000 tonnes/year • Energy Production: 12,380,000 Nm3 of biogas per year • RNG Exported to the grid: 6,800,000 Nm3 per year • Compost: 6,500 tonnes/year to local agriculture • Liquid Fertilizer: 52,400 tonnes/year to local agriculture • Pre-treatment of feedstock via slow moving shredder, mechanical separation via star sieve and metals removal. • Thermophilic process technology, ensuring pathogen free digestate by product • Digestate resulting from the anaerobic digestion process is dewatered via HZIU's own KOMPRESS dewatering technology and separated into solids and liquid. • Solid digestate is aerated in aeration hall to control odors and marketed as nutrient rich soil amendment to local agriculture • Liquid digestate is marketed as nutrient rich liquid soil amendment for local agriculture. • Facility control, monitoring, and performance tracking is accomplished via a supervisory control and data acquisition (SCADA) system.
Construction	HZI acted as EPC for turnkey system with commissioning in early 2019
Operations	HZI will support the owner/operator E.ON Biofor Sverige AB based on the extensive

	experience from operations of European facilities.
Permitting & Regulatory Compliance	HZI acted as support to E.OB Biofor Sverige AB in obtaining all necessary environmental, building, air and operating permits and approvals from local, regional and national authorities.
Odor Control	All processing at the facility are enclosed within the negative air pressure process building. Odor control is handled by a state of the art air handling system with approximately 6 to 8 air-changes per hour. The digester itself is a completely closed system, as the process operates under anaerobic conditions, i.e. in the absence of oxygen. Therefore, no emissions are released into the surrounding environment by the digestion plant. Waste air collected from the process buildings is moistened with water by means of a special nozzle system operated with compressed air. Reaching humidity levels of 95% guarantees an optimal operation of the subsequent biofilter, requiring minimal maintenance. In order to reduce odor and ammonia emissions an acid scrubber is installed upstream the biofilter.

2.3.4 REFERENCE #4 – VETROZ AD PROJECT

Project Name	**Vetroz AD Project**
Location	Vetroz Switzerland
Owner/Operator	GazEl SA
Status	Operating since 2014

Project Name	Vetroz AD Project
Description of Services	 The facility processes 20,000 metric tonnes of Source Separated Organics and Green Waste from the City of Vetroz' and surrounding municipalities residential "Organics Bin" collection programs. The plant utilizes the Kompogas High Solids Anaerobic Digestion (HSAD) technology with a PF 1300 digester. The resulting biogas is upgraded utilizing the HZI own BioMethan upgrading technology and the resulting Renewable Natural Gas (RNG) is exported to the utility gas grid.
Development	• HZI has been an integral part in development of this facility, being heavily involved in permitting and acting as planning, construction and commissioning entity of the system. • Facility utilizes one PF 1300 Kompogas Digester based on the proven HZI owned High Solids Technology • Resulting biogas is upgraded to Renewable Natural Gas utilizing the HZI BioMethan Amine Scrubbing technology
Description of Facility	*Facility specifications:* • Feedstock: Source Separated Organics and Green Waste from residential collection program • Proven Kompogas High Solids Anaerobic Digestion Technology • Design Capacity: 20,000 tonnes/year • Energy Production: 1,900,000 Nm3 of biogas per year • RNG Exported to the grid: 1.050,000 Nm3 per year • Compost: 10,000 tonnes/year to local agriculture • Liquid Fertilizer: 10,000 tonnes/year to local agriculture • Pre-treatment of feedstock via slow moving shredder, mechanical separation via star sieve and metals removal. • Thermophilic process technology, ensuring pathogen free digestate by product

Project Name	Vetroz AD Project
	• Digestate resulting from the anaerobic digestion process is dewatered via HZIU's own KOMPRESS dewatering technology and separated into solids and liquid. • Solid digestate is aerated in aeration hall to control odors and marketed as nutrient rich soil amendment to local agriculture • Liquid digestate is marketed as nutrient rich liquid soil amendment for local agriculture. • Facility control, monitoring, and performance tracking is accomplished via a supervisory control and data acquisition (SCADA) system.
Construction	HZI acted as EPC for turnkey system with commissioning in early 2014
Operations	GasEL SA, is operating the facility with the support of HZI and their extensive experience from operations of European facilities. The facility is staffed by four fulltime employees.
Permitting & Regulatory Compliance	HZI acted EPC to GazEL SA and was integrally involved in obtaining all necessary environmental, building, air and operating permits and approvals from local, regional and national authorities.
Odor Control	All processing at the facility are enclosed within the negative air pressure process building. Odor control is handled by a state of the art air handling system with approximately 6 to 8 air-changes per hour. The digester itself is a completely closed system, as the process operates under anaerobic conditions, i.e. in the absence of oxygen. Therefore, no emissions are released into the surrounding environment by the digestion plant. Waste air collected from the process buildings is moistened with water by means of a special nozzle system operated with compressed air. Reaching humidity levels of 95% guarantees an optimal operation of the subsequent biofilter, requiring minimal maintenance.

2.4 Conflict of Interest Statement

HZI warrants that no gratuities have been or will be offered or given by the Project Team, or any agent or representative of the Project Team to any officer or employee of SCWMA or any participant in the selection of a proposal to furnish the services described in the RFP in order to secure a favorable treatment regarding the evaluation, scoring and Agreement award process.

2.5 Litigation notice of Violation History

HZI does not have a history for the last five years of any claims, settlements, arbitrations, litigation proceedings, and civil actions involving $100,000 or more and all criminal actions in which the companies, parent companies subsidiaries, all partners or principals were involved.

HZI does not have any current or threatened legal actions in California against it, their parent companies, subsidiaries, all partners, principals, or joint venture companies by a governmental entity contracting with HIZ or its parent company for services related to solid waste management, or against such government entity by HZI or its parent companies or joint venture companies.

HZI does not have any notice of violations and/or enforcement actions taken against it during the last 5 years by any regulatory agency such as, but not limited to, the United States Environmental Protection Agency, Air Quality Management District, a Local Enforcement Agency under the California Integrated Waste Management Act, or Cal/OSHA. HZI has not had any permit, franchise, license, entitlement or business licenses revoked or suspended in the last 5 years.

HZI does not have any liquidated damages, administrative finds, charges or assessments that total $50,000 or greater in any one calendar year during the last 5 years that have been paid by HZI to a public agency as a result of solid waste management services provided by HZI.

HZI does not have any claims against a bid, proposal, or performance bond and the results and failure to receive a bid, proposal or performance bond or any contractual defaults or termination in the last 15 years.

2.6 Supporting Team

To ensure the success of the proposed project, HZI has assembled a Project Team of experienced and qualified firms that include strong project management, engineering, construction, environmental and permitting experience while complementing the team with waste haulers with logistical expertise and knowledge of the local market, as well as innovative food waste processing, digestate management and biogas utilization technology firms. The team has a productive working relationship based on previous experience and is committed to collaborating with the SCWMA to bring the proposed project to a successful outcome. HZI will also involve other vendors as required throughout the project

2.6.1 GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. GHD provides engineering, environmental and construction services to private and public sector clients.

Established in 1928 and privately owned by our people, GHD operates across five continents—Asia, Australia, Europe, and North and South America—and the Pacific region. GHD employs more than 8,500 people in over 300 offices to deliver projects with high standards of safety, quality, and ethics across the entire asset value chain. Driven by a client service led culture, we connect the knowledge, skill, and

experience of our people with innovative practices, technical capabilities, and robust systems to create lasting community benefits.

Our experience in deploying projects of this scale at the municipal level will bring significant benefits to the City and SCWMA from technical and management perspectives. Understanding suitable options, service delivery models, and regulatory and market risks requires hands on knowledge of these facilities and involvement in the development cycle on a day to day basis. Of particular note - within the past 8 years, GHD has been involved in the development of the following organics facilities: City of Toronto's Disco Road Organics Processing Facility (Ontario, Canada); City of Toronto's Dufferin Organics Processing Facility expansion (Ontario, Canada); City of Guelph's Organic Waste Processing Facility (Ontario, Canada); Orgaworld's composting facilities in London and Ottawa (Ontario, Canada); the Lystek Organic Processing Facility in Fairfield California; enclosed composting facility in Mariposa County California; dozens of landfill, renewable energy and CNG projects throughout the Americas; and many other projects involving alternative energy from waste.

2.6.1.1 Key Staff

PAT COLLINS is a Senior Project Manager with over 30 years of professional experience. Throughout her career, Pat has been extensively involved in public communications and interaction with elected decision makers. She specializes in environmental planning and documentation, environmental permitting, water supply and wastewater planning, and project management. She has substantial experience in northern California with CEQA and NEPA documents for controversial projects, including waste management, wastewater treatment and discharge, recycled water, water supply and distribution, Stormwater and flood control facilities, and groundwater development. Pat is particularly skilled at integrating CEQA and permitting requirements into engineering design and construction documents.

KENNETH MIERZWA is an experienced project manager and wildlife biologist specializing in endangered species, wildlife surveys, construction monitoring, and environmental policy. He has more than 26 years of experience throughout the U.S., and especially in Northern California, the Midwest, and the Northeast. Mr. Mierzwa is especially knowledgeable on amphibians and reptiles, and also has extensive experience with mammals, fishes, selected invertebrates, and landscape-level conservation biology including habitat assessment. Mr. Mierzwa is also experienced with wetlands permitting and restoration including development of conceptual mitigation and preparation of final mitigation and monitoring plans. He has prepared biological assessments and habitat conservation plans, and designed of related field studies. He has also conducted biotic inventories, pre-construction surveys, construction monitoring, and designed post-project long term monitoring protocols for construction projects. He is experienced in the preparation of National Environmental Protection Act (NEPA)/ CEQA environmental impact studies.

TEJ GIDDA is a Principal with GHD with more than 12 years of industry experience. His main focus is the investigation of alternative waste processing technologies, including aerobic treatment of source-separated organics (SSO) and anaerobic digestion, energy-from-waste including gasification, mixed waste processing and mechanical biological treatment, and Biosolids management. Tej is also an expert in chemical and biological odor abatement systems as related to waste processing facilities, and has been involved for a significant period of time with biogas to energy facilities. Tej's work includes the

design, construction, and commissioning of municipal and private waste management facilities, as well as work in greenhouse gas management and emission reduction trading.

KYLE MUFFELS has 10 years of experience with GHD commencing after his completion of a B.A.Sc. degree in Environmental (Civil) Engineering from the University of Waterloo. Kyle has worked extensively in the waste management field with a specific focus on civil, mechanical, and energy conservation design relating to landfill, industrial facilities and related processes. Kyle regularly completes a range of services including internal project management of various design disciplines, municipal and federal permitting, construction management, contract administration, and detailed design engineering services involving site development and process.

DAGAN SHORT has over 18 years of experience in a variety of civil and environmental engineering projects, encompassing a specific emphasis in construction management. Familiar with the design process, Mr. Short has been involved with all stages of engineering design, from traditional civil engineering projects to developing integrated software platforms, and possesses a strong numerical modeling background in hydrologic and hydraulic forecasting, contaminant transport and fate analyses, geotechnical analyses, and GIS map production. His construction experience covers airports in three states and has been focused on soil/groundwater remediation, wetland mitigation construction, commercial development and infrastructure, and solid and hazardous waste landfills.

RICK GUGGIANA is a licensed electrical engineer with over 29 years of experience in the electrical, controls, and instrumentation fields. He has extensive experience in site and building power, medium voltage distribution, lighting, motor controls, electrical system studies, Supervisory Control and Data Acquisition (SCADA) systems, and instrumentation. His background includes a wide spectrum of clients from commercial to industrial to government. Rick was involved in the design and construction management of a 115-kV substation project which won a merit award from the Consulting Engineers and Land Surveyors of California (CELSOC).

TED WILTON is a Principal at GHD with over 30 years of experience consulting with public agencies on water resources projects. He has extensive planning and project implementation experience across the water cycle including water supply, wastewater collection, water reuse, flood protection, utility master planning, and asset management. Serving as GHD's Integrated Water Management Service Line Leader for North America, Ted is networked across GHD's global water community sharing industry developments and leveraging technical resources to address specific client needs.

Detailed CVs for the GHD personnel are found in Exhibit B. Additional team members would be brought into the Project depending on the services that were required to support the development, construction, commissioning and operation of the facility.

2.6.1.2 Responsibilities

GHD would provide support during the permitting process including CEQA and mitigation measures for the California Tiger Salamander. GHD would also utilize its experience in design and construction of a number of organic waste facilities to support HZI as required. GHD would also provide balance of plant engineering services based on feedback from the Project Team.

2.6.2 Wildlife Research Associates/ Jane Valerius Environmental Consulting

Wildlife Research Associates (WRA) is a small biological consulting firm located in Sonoma County. WRA provides focused surveys for special status wildlife species, habitat assessments, due diligence surveys, habitat enhancement, mitigation design and monitoring, construction monitoring, scientific field research for species management and related services.

Jane Valerius Environmental Consulting is a one-person woman-owned firm that has been in business for 19 years as a sole proprietorship in California. Jane works closely with other independent consultants including WRA and other botanists. Ms. Valerius has extensive experience conducting botanical surveys and wetland delineations and preparing Section 404, Section 401 and Section 1600 permits for the USACE, Regional Water Quality Control Board (RWQCB) and California Department of Fish & Game, respectively.

2.6.2.1 Key Staff

TRISH TATARIAN has a Master of Science degree in Ecology and is a general ecologist experienced with a wide range of taxa. She has conducted several multi-season research projects and also prepares biological assessments, site assessments, and conducts construction monitoring for a wide variety of species.

JANE VALERIUS has a Master of Science degree in Ecology and is a botanist/plant ecologist and wetlands specialist with 35 plus years of highly professional experience both in conducting field studies and in managing projects. Ms. Valerius is proficient in conducting vegetation and biotic surveys, rare plant surveys, and wetland delineations. Ms. Valerius lives in Sonoma County and knows the rules and regulations related to special status plant species in the region and for the Santa Rosa Plain. Ms. Valerius has designed mitigation monitoring plans for wetlands and prepared environmental impact assessments to support development of transmission line, public works projects, residential communities, landfill and mining expansion, and energy and water resource facilities.

Hitachi Zosen INOVA

3. Statement of Financial Qualifications

HZI has the financial qualifications to perform the work described in the RFP. HZI would utilize internal funding as outlined in the financial capabilities letter.

The attached document provides documentation of the HZI's ability to secure financing for all trucks, facilities, other equipment and labor required to perform all services described in the RFP including the total estimated amount of the expense and financing that is expected to be incurred and utilized in performing the work.

As Appendix D and attached to this statement, HZI has included a letter from its bank BTMU, clearly stating that HZI has the adequate assets and/or irrevocable letters of credit that are sufficient to compensate for all capital costs, equipment costs, start-up costs and a minimum of 3 months of operating costs and all required payments to SCWMA.

HZI has included financial statements in Appendix E. It includes 3 years of business tax returns with supporting schedules.

If SCWMA requires further discussion with HZI's accounting firms, HZI is willing to set up discussions to discuss the financial status including ownership of, or interest in, equipment and facilities prior to the award of the Agreement.

HZI requests that SCWMA keep the information provided in Appendix E – Financial Statements in confidence. This is proprietary information that can be used by competitors in the industry for future bidding processes.

4. Technical Proposal

4.1 Introduction

The Project Team understands that SCWMA issued the RFP to have Proponents provide proposals for organic materials processing services due to the lack of in-county organics management infrastructure and the need for high quality compost. The goal of the Project is for SCWMA to enter into an agreement to process organics starting as soon as possible for the next 20 years. The Project clearly needs to provide up to 70,000 tons per year (tpy) of processing capacity. The Project needs to meet the CDFA composting guidelines and other applicable regulations, standards and guidelines while minimizing the capital costs/operational costs and managing any potential impacts to the community.

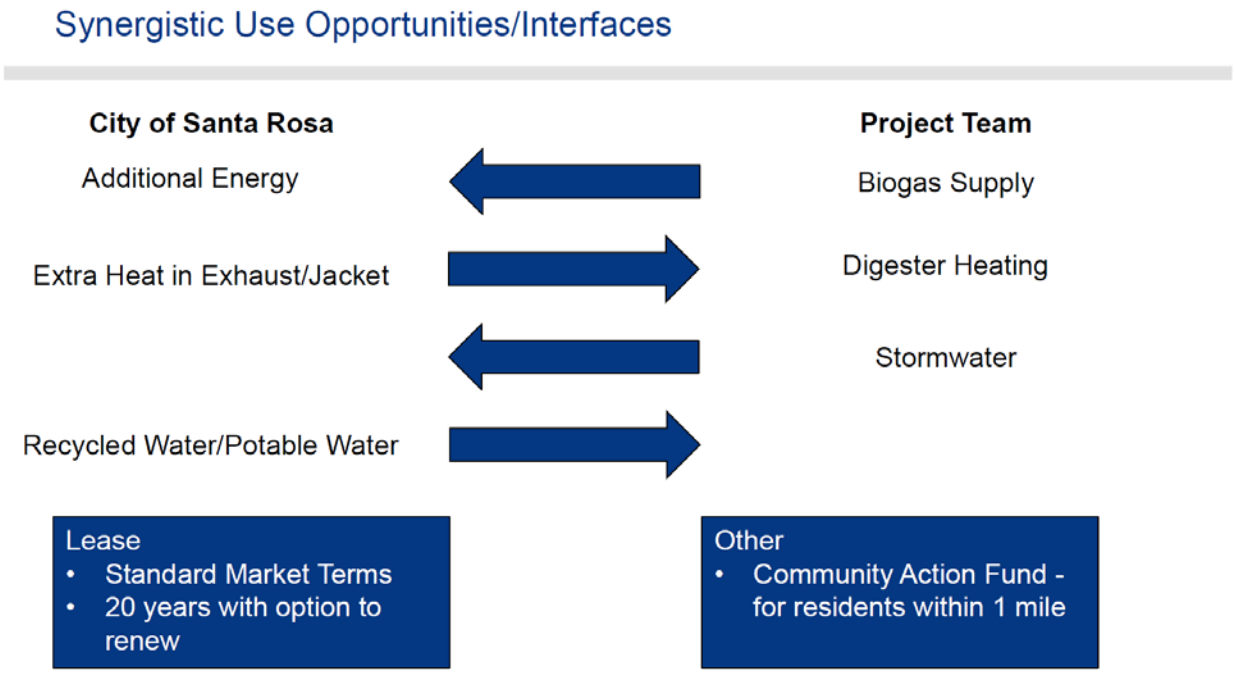
Based on this outline, HZI assessed the various technical approaches and developed a proposed solution that would convert the SCWMA's organics to high quality compost and renewable energy in form of biogas that would meet the SCWMA's goals. The Project would be completed under a Finance-Design-Build-Own-Operate-Maintain (FDBOOM) solution. The Project Team would be responsible for financing, design, construction, ownership, operation, and maintenance of the infrastructure for the duration of the agreement with the option to extend the feedstock service agreement beyond the 20 years. The facilities would comply with all CDFA requirements as well as the County's Solid Waste Laws. The Project Team is also responsible for the management of any and all beneficial outputs and by-products including high quality compost and biogas. This solution would provide SCWMA with a facility that would meet its intended objectives and the ability to adapt to new regulations over the life of the facility.

The facilities would accept SCWMA's organics delivered by collection contractors as well as ICI organics from approved entities. The design concept is developed to manage all residential and ICI organic feedstocks based on SCWMA's current organics program including seasonal volume and composition variability. The inclusion of thermophilic AD allows for meeting pasteurization requirements as well as future program changes such as change in law for more stringent composting guidelines, inclusion of new feedstocks, a rise in the portion of food waste and other policy changes such as acceptance of grass clippings, compostable ware and pet waste, which would not likely be possible with in-vessel composting operations.

Location of the infrastructure would be at a site adjacent to the City of Santa Rosa wastewater treatment plant. HZI has been awarded a LOI, Letter of Intent to Negotiate by the City of Santa Rosa, in response to the City's "Request for Proposal for Location of an Organics Processing Facility on the City of Santa Rosa Property". The LOI, dated December 7th, 2017 is attached as Appendix F to this proposal. With securing this site, the Project Team has ensured the ability to expedite permitting, as siting this facility is also in the City's interest, the City has indicated to assist in management of the public consultation process for the new facility.

Siting adjacent to the City of Santa Rosa WWTP is a major keystone of HZI's holistic approach to the overall project and will capitalize on a synergistic approach to local opportunities and interfaces.

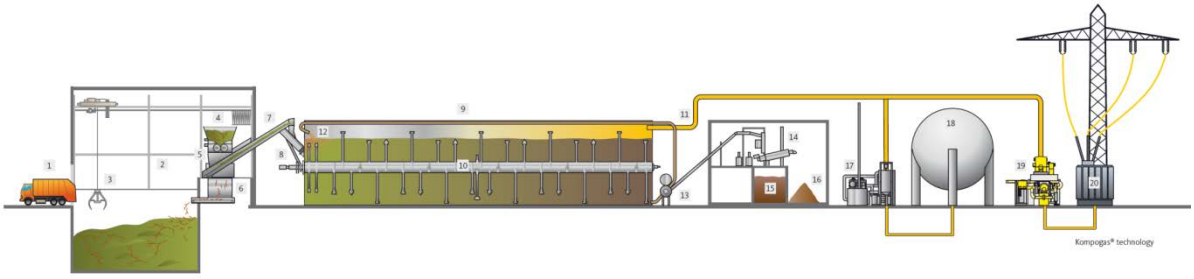
In the table below, we outline the synergies:



The new facility would be capable of accepting organic streams such as residential organics, green waste and ICI organics with a total capacity of 70,000 tpy. From a technological perspective, HZI would provide its own, proven Kompogas® High Solids Anaerobic Digestion technology as it is a pioneer in the field of dry anaerobic digestion and a specialist in the digestion of municipal and commercial organic waste. This commercially proven organics management technology is capable of processing organics from residential and ICI sources similar to SCWMA's feedstocks. The Kompogas® concept is proven worldwide since 1991 and features a modular plant system that fully meets strict waste management requirements in terms of independence, efficiency, economy and operational aspects. More than 80 dry digestion plants using HZI's Kompogas® process have been installed worldwide and are operated successfully and reliably. The Kompogas process is based on the dry digestion of solid organic-wastes (i.e. waste biomass from domestic, commercial or industrial activity), in an oxygen-free environment. In this way, CO_2-neutral biogas is produced. This renewable biogas can be used either for the production of renewable electricity through Combined Heat and Power Systems (CHP) or alternatively processed/upgraded to renewable natural gas (RNG) and fed into the natural gas grid or utilized as CO_2-neutral vehicle fuel (CNG). Either of these beneficial uses will contribute towards the County's goals of reduction of their carbon footprint. Further, the recycling of organic materials through anaerobic digestion also yields digestate, containing valuable plant nutrients with many beneficial uses for the local horticultural and agricultural community. After removal of bacteria, pathogens and spores due to the thermophilic digestion process, the sterilized residue (i.e. digestate) can be utilized directly as a natural fertilizer or as outlined in this response, would be refined to produce high quality compost as well as a liquid fertilizer. Therefore, the organic material cycle is closed.

The site-specific mass and energy balance are provided in Appendix G and H.

The following diagram depicts the described technology for the facility that will be utilized for the project on the City's site:



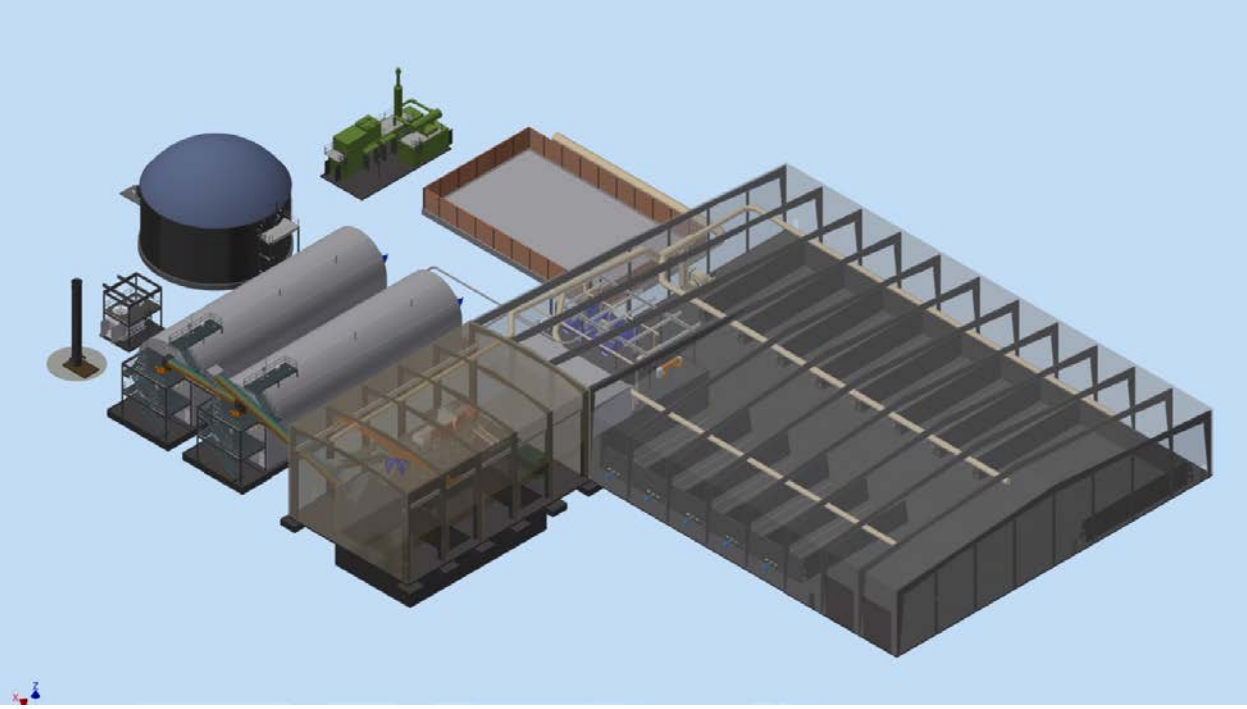
Waste receiving and storage	Anaerobic digestion	Discharge	Energy utilization
1 Waste receiving	4 Shredder	12 Inoculation pipe	17 Biogas upgrading HZI BioMethan®
2 Waste bunker	5 Sieve	13 Discharge system	18 Gas storage
3 Waste crane	6 Sieve rejects	14 Dewatering press	19 Combined heat and power plant
	7 Conveying system	15 Liquid digestate	20 Transformer
	8 Feeding system	16 Solid digestate	21 Electricity export
	9 Digester		
	10 Agitator		
	11 Biogas pipe		

The HZI concept is designed to mitigate and control odors, noise and other nuisance impacts to adjacent properties and the surroundings. The design would include features such as process buildings with negative pressure, fast acting doors, a ventilation system that would capture emissions at the source within the process buildings with a prescribed number of air changes per hour and a state of the art bio filter. The design would also include all necessary infrastructures to manage and/or treat leachate, wastewater and process water within the enclosed system.

The Project Team assessed the overall objectives of SCWMA. Through this assessment, addressing the following points were driving factors in the approach to the design of this project:

- Long terms solution to address processing of SCWMA organic materials for 20 years, contributing towards the County's diversion goals;
- Processing of SCWMA organics through proven Anaerobic Digestion Technology;
- Secured siting of proposed facility through LOI with the City of Santa Rosa;
- Receipt and processing of the SCWMA's organic wastes efficiently, cost-effectively and with minimal odor nuisance and environmental impact in enclosed process buildings;
- Providing additional biogas to the City's biogas utilization infrastructure that meets stringent quality standards and will not have an adverse impact on the operation of the City's WWTP digesters; and
- Providing a cost-effective post-processing solution for the organic waste-derived digestate into high quality compost.

4.2 Facility



As requested in the RFP, the detailed description of the technology that would be utilized is outlined below and the technical documentation is attached in the appendices as outlined in this paragraph. It contains all of the relevant information requested with the process narrative and key equipment. The relevant mass/water and energy balances are provided in Appendix G and H, respectively. The Process Schematic/Process Flow Diagrams are provided in Appendix J.

A set of P&IDs of the proposed facility are found in Appendix K while detailed descriptions of key equipment are found in Appendix L.

The aerial/general arrangement drawing and ISO view of the facility is found in Appendix M. In the mass balance, HZI has outlined how different materials would be managed at various stages of processing to ensure that no material is stored on site for longer than allowed under permits.

HZI is proposing a long term agreement (20-years) as described in Section 3 of the RFP. Upon award HZI will establish a Special Purpose Vehicle company (SPV), Kompogas Sonoma LLC, which would be the owner and operator of the proposed facility. The facility would be located adjacent to the City of Santa Rosa WWTP. The proposed organics facility would be designed to encompass approximately 4 acres. This will include the ingress and egress for the facility from Llano Road or Meadow Lane, receiving areas, digesters, final treatment buildings of the digestate, and the biofilter. The exact amount of acreage and usage of each APN depends on the final site layout, but it is anticipated that a portion of each may be

used. The Project Team has reviewed these properties and is aware of the California Tiger Salamander and possible wetlands issues that may be present on these individual sites and has addressed them later in the document.

As requested for long term facilities, HZI has a reference facility that is using equivalent technology that has been permitted and is currently under construction within the United States and California. More information about this facility Kompogas SLO LLC is available in Appendix N.

The Project Team's approach for the land was to (1) meet the requirements of the RFP; (2) construct a plant that is efficient to operate; (3) minimize the impact on the City's current operations; and (4) minimize the environmental impact. The project team was also trying to consider whether road improvements would be required (unlikely on Llano Rd however more likely on Meadow Lane or Walker Avenue). It was also trying to consider the local neighbors, decommissioning of well and septic systems, and the intermittent gas and electrical services required to operate the processing facility however, they are available and adequate at the WWTP and the existing composting site.

Waste Handling

Organic waste reception, pre-treatment and intermediate storage

The organic waste delivered to the plant is scaled on the weigh bridge and then tipped into the designated pit bunker section located in the reception building. The pit bunker acts as an intermediate storage. The feedstocks would include green waste, food scraps, etc. The receiving hours at the facility may be from 7am to 5pm Monday through Saturday (subject to negotiations) while the facility would operate 24/7.

The feedstock is picked up by the automated waste crane as needed and fed into the shredder where it is shredded and screened to approximately 2 inches. Ferromagnetic particles are removed using a magnetic separator. The pre-treated material is then transported to either one of the two digesters via conveyor belts and fed into the vessel via a dosing screw conveyor. These conveyers are equipped with a scale to monitor the amount of material fed into the digester. Oversize material is conveyed back to the waste bunker for reprocessing. Screened out contaminants are deposited into a haul-off container for further treatment or disposal.

The Project Team is planning to use these initial pretreatment steps in combination with post processing screening technologies to remove physical contamination in order to produce a high quality, marketable compost that meets CDFA standards and also meet the less than 10% post processing residual

requirements by SCWMA and would ensure that it was met as measured by outbound tons on a quarterly basis.

Anaerobic Digestion

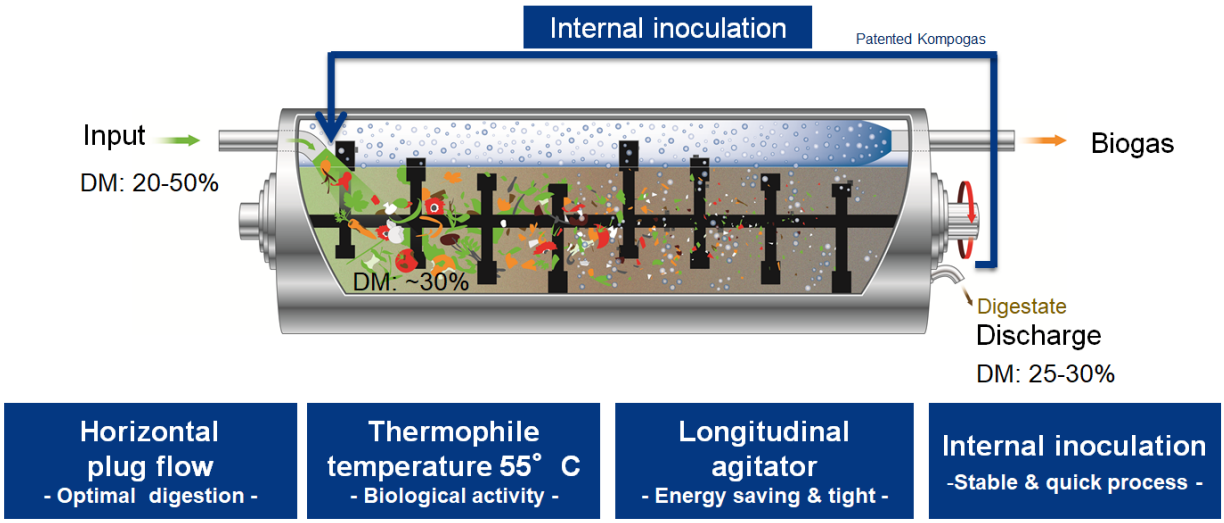
Kompogas Digester

The continuously fed, horizontal PF1500 plug-flow digester has a nominal capacity of 53,000 ft.^{3}(at filling level of 85%). The digester is a patented steel structure with inner dimensions of approximately 112 ft. x 28 ft. (length x diameter).

In order to minimize heat losses, the steel tank is fully enclosed by insulation. The entire digester module is installed outdoors and enclosed by a weatherproof housing.

A central heat distribution system is installed underneath the digester within the enclosure, accessible by doors from both ends.

The anaerobic digestion process is based on thermophilic dry digestion at a temperature of approximately 131°F and a retention time of approximately 14 days. At this process time and temperature, any unwanted seeds, germ buds and microorganisms are reliably eliminated inside the gas tight digester. A slowly turning agitator device results in optimal degasification, whilst sedimentation of heavy matter in the digestion substrate is prevented due to special positioning of the agitator paddles. The longitudinal agitator used in the digester is a fully welded structure without screw connections, thereby designed for a long service life.



Digestate Treatment

After the digestion process, digestate is discharged by a specially designed, heavy duty discharge pump to the dewatering area of the plant.

Dewatering

Screw Press

Dewatering of the digestate is done by a Kompogas® screw press, separating the digestate into a dry fraction and the associated liquid digestate (liquid digestate with a dry matter content of approximately 16%). Initially, the liquid digestate is directed to a small intermediate storage tank. The amount of liquid digestate depends mainly on the dry matter content of the incoming organic waste and the dry matter content of the dewatered solid digestate, which can be adjusted by the pressure in the dewatering press. The press is positioned in an elevated position, so that the dewatered solid digestate falls freely down onto a defined surface inside the solid digestate storage area.

Decanter

The liquid digestate from the intermediate storage tank is processed further by a decanter centrifuge in order to reduce the dry matter content of the liquid digestate to <10% (centrate).

The centrate is firstly directed to a centrate intermediate storage tank. Centrate can subsequently be used to moisturize incoming feedstock if required, eliminating the need for outside process water.

Liquid digestate storage and loading

Liquid digestate from the centrate collection tank is pumped to the liquid digestate storage tanks outside the main building. The storage tank is covered by a gas and odor tight membrane and equipped with a water tight door. It is used as buffer storage so that the liquid digestate can be used as liquid organic fertilizer in the agriculture or as outlined above can be used for moisturizing.

Composting

Aerobization/Curing

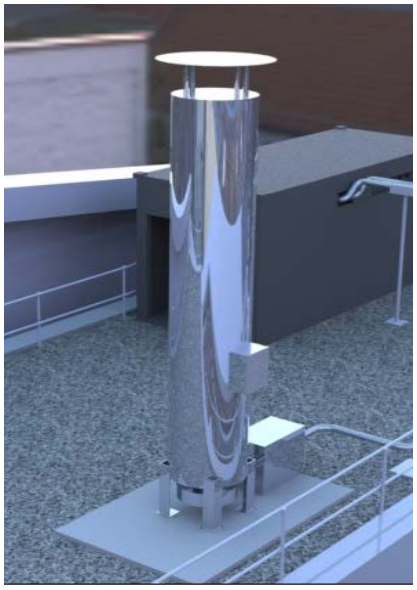
The aerobization and curing processes of the solid digestate is based on aerobic processing of the material. The material would be in the aerobization boxes for 21 days to complete the active composting phase and create finished compost. Through the anaerobic digestion and subsequent composting stages, the compost will not reheat and will ensure that the facility produces a compost that meets the regulatory compost standards as well as end market requirements.

The Project Team is planning to use these post steps in combination with the initial processing contamination removal technologies to remove physical contamination in order to produce a marketable compost that meets CDFA standards along with the SCWMA requirement to have less than 10% post processing residual as measured by outbound tons on a quarterly basis.

Biogas System

Biogas Flare

A safety gas flaring system is installed which ensures that any excess biogas is safely incinerated (e.g. when biogas utilization is stopped or in case of an emergency). Typically, a two-stage gas flare is installed, which combusts the biogas in a reliable and environmental friendly way. The flame burns at a minimum temperature of 1560°F in a heat-insulated protective tube, and cannot be seen from the outside. Ignition occurs fully automatically once gas pressure in the digester reaches a range of 0.7 psi.



The gas pressure in the line is monitored by a minimum pressure switch. If the pressure falls below the minimum value, then the flare is disconnected and extinguished. A flame arrester is installed in the gas pipeline before the flare system in compliance with appropriate regulations.

Biogas Analysis

The dry biogas is analyzed for its methane (CH4), carbon dioxide (CO2), oxygen (O2) and hydrogen sulfide (H2S) content. Measurements take place periodically and the values are displayed and recorded in the plant control systems. This allows a close monitoring of the biological process and quick detection of any irregularities, allowing taking early actions.

Biogas Desulphurization

The raw biogas from the digesters is directed to a chemical / biological desulfurization unit. The use of special cleaning pellets allows a hydrogen sulphide (H2S) reduction of > 90%.

Biogas Storage

The head space in of the digester is used as a storage buffer for the continuously produced biogas. Additional external gas buffering storage is provided on top of the liquid digestate storage tank with a flexible double membrane roof. This ensures optimal operation of the biogas utilization equipment and hence efficient energy use. The biogas is extracted from the buffer biogas storage membrane through stainless steel pipes and fed first into a biogas pre-treatment/cleaning system and subsequently into the biogas utilization system.

The concept of this project is that biogas would subsequently be used as a renewable fuel by the City of Santa Rosa WWTP Combined Heat and Power Units or alternatively utilized through onsite CHP and fed into the local electric grid.

Electrical Power System and Controls

The process control system is designed to match with the plant's process concept. The complete control system is located in an air-conditioned electrical room within the plant, together with the low voltage distribution system. A PC-based local operation station for monitoring and controlling the entire plant is also placed here, while a remote control PC, connected via a DSL connection, can be placed in a central control room anywhere else. The entire facility would have instrumentation to allow it to be monitored 24/7 while being fully automated and thus allow it to operate in an unmanned position except during receiving hours. Additional information on the standard controls is provided in the sample P&ID's that are found in Appendix K.

Buildings and Facilities

All handling of organic materials (reception, pre-treatment, intermediate storage, digestate post-treatment, etc.) occur in the closed, negative pressurized and ventilated halls, therefore minimizing odor emissions to the surrounding environment. Only the digester itself and some auxiliary systems mounted in containers (such as heat distribution, control system, biogas treatment system, etc.) are placed outdoors. Further, some indoor space / rooms are required for auxiliary systems such as compressed air system, pumps for bunker / waste water and rain / service water, etc.

Waste Air Treatment

The digester itself is a completely closed system, as the process operates under anaerobic conditions, (i.e. in the absence of oxygen). Therefore, no emissions are released into the surrounding environment by the AD portion of the facility.

Waste air collected from the various halls through the waste air ventilation system would be moistened with water by means of a special nozzle system operated with compressed air. Reaching humidity levels of >95% guarantees an optimal operation of the subsequent biofilter, requiring minimal maintenance. In order to reduce odor and ammonia emissions, an acid scrubber is installed upstream the biofilter.

All handling of organic materials (reception, pre-treatment, intermediate storage, digestate post-treatment, etc.) occur in the closed, negative pressurized and ventilated halls, therefore minimizing odor emissions to the surrounding environment. Only the digester itself, biofilter and some auxiliary systems, such as switch gear and desulphurization system) are placed outdoors. Auxiliary systems such as control system, ventilation system, compressed air system, heat distribution system and pumps are located inside.

4.3 Detailed Schedule/Permitting Plan/Construction Approach/Commissioning

As requested in the RFP, for long term facilities, a detailed schedule and plan for planning and obtaining all necessary permits as well as key dates such as construction start date, start of operations are outlined below. The plan implementation process and timeline is found in Appendix O.

Key Milestones:

- Expected Award of Project: July 2nd, 2018
- Expected Start of Construction: August 1st, 2019
  (depending on permitting progress and approvals)
- Expected Begin of Hot Commissioning / Start of feedstock receiving: December 3rd, 2020

Upon award of the contract by SCWMA, our permitting approach will initially include meeting with all responsible agencies to define the project description, determine permit requirements, ascertain roles and responsibilities, and discuss a preliminary determinate schedule. If, in the process of meeting with the agencies, there are modifications to regulations or additional requirements, HZI will modify the project, accordingly. The proposed preliminary schedule responds to the operational deadlines outlined by the SCWMA, and all opportunities to expedite permitting will be taken to ensure the project is delivered on time or ahead of schedule. It is anticipated that the SCWMA and the City of Santa Rosa will work to fully support and streamline the permitting process, as the project moves forward.

HZI has recently permitted a similar continuous high-solid anaerobic digestion facility in the County of San Luis Obispo, CA and thus provides an experienced Project Team to work collaboratively with SCWMA and other responsible agencies to entitle, develop, construct, and operate the proposed organics processing facility. The mentioned reference project in San Luis Obispo, which is currently under construction and is nearing mechanical completion, has also been developed on a FDBOOM basis by HZI and therefore all the lessons learned and experience from this project can be applied towards the SCWMA project.

HZI's operations concept will include receiving of all organic feedstock, pre-processing, dedicated digestion modules and all activities associated with digestate management and fertilizer production, as appropriate. The biogas from the digestion process will be cleaned and, upon agreement with the City, transferred to the City's WWTP CHP system, which is a currently permitted facility. Alternatively HZI has made provisions to be able to utilize the biogas in onsite CHP units for electricity production and fed into the local electrical grid, thereby potentially benefitting the residents of Sonoma County.

The project will be designed to comply with California Environmental Quality Act (CEQA), other State and local regulations, and incorporate mitigation measures into the project description based upon other successful and similar facilities approved throughout California.

At the time that the City signs a lease with prospective team for this Project, the City will need to approve a CEQA document that identifies the potential environmental impacts of such an operation. However, it will need to be determined if SCWMA has already prepared a CEQA document by the time the lease is negotiated. Therefore, it will be important for the City and SCWMA to coordinate regarding the CEQA strategy and to determine which agency should be the Lead Agency and which agency will be a Responsible Agency. The Project Team through GHD is able to assist with these discussions and either prepares a comprehensive document to be used by both agencies, and assist the appropriate party in its process as a Responsible Agency, in the case where the SCWMA has already prepared the CEQA documentation.

The Project Team has reviewed the IRWP Program EIR which includes a variety of upgrades to the City's WWTP and has been used for a variety of purposes since its original certification in 2004. The Project Team would need to do further assessment of the main proposal or the impact of the additional options that the Project Team has proposed to the City in its submission on the parcel of land. Once the concept is narrowed down/selected, the Project Team can assist SCWMA in determining whether or not an EIR Addendum or tiered CEQA document may be sufficient for the Project. This approach could potentially allow the stakeholders to save time and money, as no public circulation would be required.

The Project Team believes that it is possible to create and define a project to avoid potentially significant impacts and successfully obtain project approval in a streamlined manner. The Project Team would develop a comprehensive project description based upon a variety of supporting technical and environmental documents. This robust documentation will demonstrate to SCWMA and the City, and other agencies, full compliance under CEQA and other regulatory requirements.

The proposal assumes that the City will initiate and complete the pre-zoning and annexation process, as outlined by the Sonoma Local Agency Formation Commission. The Project Team will work closely with the City during the concurrent process of the land use entitlement and pre-zoning and provide any

necessary documentation to support these efforts. However, further discussions on the parcels of land that are being considered are laid out in the Technical Proposal section of the RFP Response.

In addition to working with the City for the land use, building and other permits, and the ultimate annexation of the property, the permitting process involves several other responsible regulatory agencies that will either influence the project design, be required to update existing regulatory documents, or be directly responsible for permit issuance.

The Project Team will provide their expertise, experience, and supporting plans and documents to work with these other responsible agencies. The following is an overview of the other responsible agencies that may be involved in the process, noting the related documents updates and/or permits:

- Sonoma County Local Agency Formation Commission - Annexation
- County of Sonoma – Update of the Non-Disposal Facility Element
- Sonoma County Integrated Waste Management Plan – Countywide Element Update
- Sonoma County Integrated Waste Management Agency
- North Coast Regional Water Quality Control Board - Section 401, Stormwater Pollution Prevention Plan
- U.S. Army Corps of Engineers – Section 404 of the Clean Water Act
- California Fish & Wildlife Service – Section 1603 Streambed Alteration Permit
- U.S. Fish & Wildlife Service – Biological Opinion
- CalRecycle/Sonoma County Environmental Health (LEA) – Solid Waste Facilities Permit
- Bay Area Air Quality Management District – Authority to Construct Permit

The Project Team is well aware that the Sonoma County populations of the California Tiger Salamander (CTS) are federally endangered and state threatened. The Project Team, through GHD and Wildlife Research Associates, has extensive experience with California Tiger Salamanders. They have prepared numerous biological assessments under Section 7 of the Endangered Species Act which have included this species, and have also addressed the species in CEQA analysis including the Santa Rosa Incremental Recycled Water Program EIR, and in Caltrans Natural Environment Studies. GHD's staff has recently acted as agency pre-approved full time biological monitors during construction projects within known CTS habitat. GHD senior ecologists have extensive pre-listing field experience with CTS including handling of adults and larvae, as well as participating in post-listing workshops held near Santa Rosa.

As outlined earlier about the USFWS, GHD is familiar with the U.S. Fish and Wildlife Service (USFWS) 2007 Programmatic Biological Opinion for the California Tiger Salamander and three endangered plant species on the Santa Rosa Plain, which identifies methods for determining impacts and establishes mitigation ratios. GHD is also familiar with the recent (2016) Recovery Plan for the Santa Rosa Plain, and the earlier Santa Rosa Plain Conservation Strategy which was proposed in 2005; although not fully implemented, this latter document provides useful planning information for the area and was the basis of some subsequent agency policies.

GHD has extensive experience mitigating project-related impacts, with an entire northern California team dedicated to habitat restoration. Specific skills include identifying conceptual mitigation mechanisms, techniques, and locations; preliminary and final design; permitting; and construction

management and monitoring. Mitigation or restoration efforts in the Bay Area have included key CTS habitat types including native grasslands, oak woodlands, and vernal pools and other seasonal wetlands.

A key component of our approach not only includes working with the regulatory organizations/agencies, but recognition of the importance of public input. The Project Team is committed to engaging the public at all phases of the process to educate, avoid conflict, collaborate with and fully disclose all aspects of the project as well as the areas laid out in the Technical Proposal section and the synergistic relationships. Along with the City, County, other Federal, State, and local agencies, the Project Team is keenly aware of the importance to protect the public health, safety, and welfare of the communities in which we work.

4.3.1 Assessment of Site Conditions

As requested in the RFP, HZI has assessed the site conditions including the points listed below. HZI is comfortable with this information and thus believes that the land use is acceptable and it can obtain the permits to operate and understands the site conditions in relation to design, construction and operation of the facility.

The information on the general site condition was obtained from a technical memorandum HZI had initiated through GHD and is based on public sources and knowledge of the area (Appendix P). The site is located in the Santa Rosa Valley within the Coast Range geomorphic province, about midway between Sebastopol and Rohnert Park, California. The Santa Rosa Valley is largely infilled with Quaternary-aged alluvial deposits which consist of clay and silt with some sand and gravel. Therefore, HZI is comfortable that the site is underlain by soft clay which can be compressible when subject to structure loading. The clay can have a moderate to high expansion potential, which can be unstable under heavy loading and can be mildly corrosive to ferrous metals and typical concrete. A very slow infiltration rate is expected however below 20-30 feet, the clay can be underlain by other alluvial deposits such as silt, sand, and gravel. Other relevant information on the specific site and general area include:

Seismic

In regards to the nearest active fault, it is the Rodgers Creek fault, which is about 6 miles northeast of the site, which is capable of an earthquake of 7.25. The site is not within an Alquist-Priolo Earthquake Fault Zone. Since the United States Geologic Survey identifies a peak ground acceleration of 0.51g for design, strong ground shaking should be expected at the site.

Floodplains

The site is not in a FEMA Designated Special Flood Hazard Area; however, it is mapped within Zone X, which has a 0.2% annual chance of flood.

Wetlands

HZI is aware of potential wetlands issues on the proposed property and has contracted with Jane Valerius, a local consultant, botanist/plant ecologist and wetlands specialist, with over 35 years of

experience which is highly experienced both, conducting field studies and in managing projects. Ms. Valerius has reviewed the proposed properties with HZI and closely discussed the potential wetlands and endangered plant life contained within the properties and will provide guidance on mitigation issues as needed.

Endangered Species Habitat

HZI has contracted with Wildlife Research Associates, Trish Tatarian since 1991, providing wildlife surveys and services to consulting firms, development, businesses, agencies and individuals for many manners of endangered species; amphibian, bats and raptors. Ms. Tatarian will assist in providing California Tiger Salamander surveys and provide guidance on mitigation measures.

Unstable Soils

The site is likely underlain by expansive clay, which could rise vertically during wetting and shrink during drying. This could impact shallow foundations, flat work and pavements thus requiring special provisions such as reinforcement, use of non-expansive fill and/or chemical treatment for mitigation.

HZI has provided our unit price (tipping fee) based on known information typical for this region. HZI requested permission to perform complete Geotech exploration on subject property and was not granted such by the City. HZI has not included any provisions for deep soil foundations, unforeseen conditions, or soil remediation. If these conditions are present, HZI reserves the right to modify our unit price (tipping fee) to reflect these unknown cost increases.

Major Aquifer Recharge Areas

The State of California – Department of Water Resources has not identified the site or surrounding vicinity as a Recharge Protection Area.

Depth of Groundwater

Groundwater is expected in the range of 5 to 10 feet below the existing ground surface. Thus, excavations deeper than 5 feet require dewatering.

Permeable Strata and Soils

The permeable strata are expected to be at depths greater than 20 feet below existing ground surface.

Proximity to Other Industry or Development

The site that is being considered is in close proximity to the City of Santa Rosa WWTP as well as adjacent farmland. It is in relative close proximity to major transportation routes and thus should make it relatively easy to access for feedstocks and transport of compost and liquid fertilizer.

4.3.2 Facility Permitting

As outlined previously, HZI has recently successfully permitted an almost identical Kompogas Anaerobic digestion facility in San Louis Obispo, CA and would apply the same methodology to permitting for the proposed SCWMA Organics Processing facility.

As evidence, we have attached as Appendix R a copy of the San Luis Obispo Conditional Use permit as granted by the San Luis Obispo County. Detailed information on permitting process and permits obtained is available upon request.

In an effort to provide more clarity, HZI can provide feedback on other relevant permits:

- Site plan in conformance with requirements for facility permit
- Report of facility information including odor mitigation plan
- Stormwater runoff management plan
- Erosion and sediment control plan
- Noise control plan

4.3.3 Contamination Protocol

The business case for the facility is designed on receiving feedstock with up to 5% contamination by weight. If the facility receives higher contamination than 5%, then a protocol defined in the O&M Manual would be enacted. This document will address the surcharge and methodology for identifying rejectable loads at the scale house. It also provides details on the contamination monitoring and detailed record keeping that will be maintained at the site at all times.

4.3.4 Overs Management

The project team understands that “overs” from the Organic Materials Processing must not be used as alternative daily cover or for beneficial reuse purposes.

4.3.5 Production of High Quality End Products

HZI brings extensive knowledge and experience to managing outputs from anaerobic digestion systems. This includes beneficial products such as compost and liquid organic fertilizer as well as by-products from the facility such as residues (i.e., front end rejects and overs).

A few of the products that would be considered under the agreement as outputs include:

- Reject Fraction including recovered materials unsuitable for processing “in-line” ;
- Ferrous/Non-Ferrous Metals in the form of cans, scrap, etc.;
- Biogas produced from the AD facility;
- Compost resulting from solid digestate from the AD facility to meet CDFA requirements;
- Liquid digestate used as fertilizer

HZI has entered into an LOI with Pacific Organics of Creston, CA, a company whose main business is to manage, distribute and resell organic fertilizer and compost. A copy of this agreement is attached as Appendix Q to this proposal. With this collaboration, the HZI project team will manage the sale and distribution of finished compost and liquid fertilizer. A certain amount of liquid digestate would be used at the front end of the process to moisten feedstock as needed; the remainder will be marketed as liquid fertilizer to local horticulture and agriculture by Pacific Organics. Further information on anticipated product and by-product quantities can be seen in the mass balance information in Appendix G.

As an example, here are pictures of the products that are produced at HZI’s reference facilities:

In relation to meeting consumer standards for these end products, HZI would ensure that it meets the CalRecycle regulations for health and safety (pathogens and metals).

HZI has seen a growing interest in providing organic certified products to the market place and depending on feedstock composition will attempt all reasonable efforts to test and market these materials as such. All marketing of compost and liquid fertilizer would be handled by Pacific Organics of Creston, CA.

4.3.6 Adaptability

The Project Team's proposed concept allows for the facility to adapt from the current organic waste tonnage and characteristic to expand and accommodate additional tonnage as the new regulations such as AB1826, AB1594, and SB1383 are implemented. It is imperative to understand that the proposed Kompogas high solids anaerobic digestion system provides the necessary flexibility and robustness to handle high levels of contamination in the food and green waste stream contemplated and also is easily adaptable to feedstock variations that might occur over the lifetime of the plant. Thus, it will allow the proposed facility to be developed as long-term, durable, robust infrastructure.

4.3.7 Ancillary Description (Form F)

As outlined earlier, the anticipated permitted capacity of the facility is 70,000 tpy and thus would be able to accommodate SCWMA's needs over the 20 year term of the services agreement. The appropriate forms have been completed and are found in Section 6 of this RFP Response.

4.3.8 Efforts to Minimize Future Litigation

HZI is very aware that organics processing infrastructure can be a contentious public issue and thus diligence needs to be undertaken on the steps to mitigate these types of concerns. The concerns mainly revolve around odor, truck traffic and noise but can also include job creation/economic development and production of high quality end products.

HZI's design incorporates a fully enclosed facility to mitigate the chance of odors as well as runoff from the facility. Further the proposed thermophilic anaerobic digestion system will mitigate pathogens and will lend itself to proper maturation of the end products. In regards to the local neighbors, HZI would plan to implement a Community Action Fund, which would allow the neighbors to participate in the success of the facility.

4.3.9 Non-SCWMA Organic Materials

HZI is not planning on accepting non-SCWMA Organic Materials from other parties and thus hasn't included this in its design concept.

4.4 Safety

As part of the O&M Manual of the proposed facility, HZI will have detailed O&M safety procedures and guidelines in place that specifically address staffing Health and Safety requirements.

HZI's strategic and operational focus is on providing a safe and healthy working environment for all our employees and partners. With our Health and Safety policies built around the three principles of competence, compliance and community our strategy is to aim for Zero incidents.

Our Health and Safety strategy, policies and procedures provide orientation for all our employees and partners to ensure their safe return home every day.

4.5 Reporting

As part of the O&M manual, detailed reporting procedures for incoming and outgoing materials will be conducted on a daily bases by the plant operator. This information will be shared for invoicing purposes with SCWMA on a monthly basis according to Exhibit B of the SCWMA Draft Services Agreement.

4.6 Operations

4.6.1 Scale procedures

Complete scale procedures will be established as part of the facility O&M Manual and in accordance with the SCWMA Services Agreement. This document also will list procedures to appropriately accept and manage emergency and/or rejected materials. HZI will provide the SCWMA with access to weighing reports promptly upon SCWMA's request, and no later than three (3) days following such request.

HZI will maintain scale records and reports providing information including date of receipt; inbound time; origin, destination and weight of inbound and outbound loads; inbound and outbound weights of vehicles; and vehicle identification number.

4.6.2 Tipping Procedures / Turnaround Times

Tipping procedures are that inbound feedstock delivery trucks will be weighed in on the truck scale. After weigh-in, the truck will be dispatched by the plant operator to back to one of four designated receiving bays of the receiving building. A Red Light/Green Light system will guide the truck towards the appropriate bay and activate a fast acting overhead door to enable access to the tipping pit. The delivery truck will proceed to dump into the receiving pit and after pulling away from the receiving bay, the fast

acting doors will be closed by the truck operator. Outbound trucks will be weighed–out on the truck scale or alternatively, tare weights will be recorded within the computer system thereby allowing the trucks to exit without weighing, reducing drivers time at the facility. The turnaround times for incoming loads is expected to be less than 30mins after driving off of the scale.

4.6.3 Load Checking Program

The plant operator will witness and check every incoming load according to the Contamination Management Protocol and Methodology established as part of the SCWMA Long Term Service Agreement upon successful award of the project. The operator will determine suitability and conformance with the maximum acceptable contamination level of the plant and the plant operator will reject the load according to the procedures established in the SCWMA Service Agreement.

4.6.4 Fuel Used for On-Site Equipment

The fuel used at the facility would include electricity wherever possible as well as diesel for rolling stock.

4.6.5 Labor Discussions, Terms and History

HZI does not foresee any issues with labor discussions and agreement terms. As part of HZI's core strategy, we do not tolerate discrimination, conflicts of interest, bribery and corruption, insider trading, political contributions or non-compliance with the law. HZI and its employees respect the rules of fair competition and intellectual property rights.

4.7 Sustainability

4.7.1 Climate Mitigation

HZI is working diligently to minimize and mitigate climate impacts. This includes using electrical equipment for screeners and rolling stock wherever economically feasible. HZI also installs Variable Frequency Drives (VFD), soft starters and other energy efficient measures at its facilities. Given the facility is also including the anaerobic digestion of the feedstocks, it is maximizing methane recovery and planning on supplying the renewable biogas to the existing engine capacity at the adjoining WWTP. HZI will endeavor to source energy from renewable sources however at this point the plan for satisfying parasitic energy for plant operation would primarily come from PG&E, the electricity and gas supplier at the site. Alternatively HZI could apply its own CHPs and utilize the biogas for power production to the PG&E power grid. The parasitic energy will be covered by the CHPs.

4.7.2 Mitigation of Other Environmental Impacts

HZI has outlined earlier that it plans to implement a Community Action Fund to support the local neighbors within 1 mile of the facility. It also plans to include design parameters that would minimize odor, noise and layout of the facility to avoid impacts from traffic.

4.7.3 Environmental Stewardship and Management Policies and Activities

HZI, as outlined above, would undertake measures to use alternative fuel vehicles wherever economically feasible. HZI would assess where possible to include the use of recycling products throughout operations and would endeavor to undertake internal waste reduction and use protocols. Given the facility is enclosed, runoff would be minimized however the use of collected rainwater would be utilized where possible in the process and HZI would comply with laws relating to electrical waste, HHW, U-Waste and the use of non-toxic products when possible. HZI has also included its energy balance for the facility in Appendix H that shows the net energy usage at the facility.

4.7.4 Use of Local Vendors

HZI has included GHD, which has a large office in Santa Rosa as well as Wildlife Research Associates and Jane Valerius Consulting which are local vendors. HZI would endeavor to utilize local vendors throughout the development, construction and operation of the facility wherever possible.

4.7.5 Compost Giveaway Program

HZI has included a compost giveaway program in line with SCWMA's request in the RFP. HZI will make available three hundred and fifty (350) cubic yards of compost twice per year at no additional cost to the SCWMA or the ratepayers for use by residents and Member Agency(ies), in parks and facility landscaping. HZI will coordinate with SCWMA staff to have Contractor staff present at the event to assist residents and distribute educational materials.

4.7.6 Training and Education Center

HZI has foreseen a training and education center as part of the overall facility to invite schools, associations and other interested parties to tour the site and learn about the diversion of organic material from landfill through Anaerobic Digestion and the subsequent production of Renewable Energy and Green House Gas reduction.

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Form A
COMMUNICATION PROTOCOL

The Sonoma County Waste Management Agency (SCWMA) commits to a procurement process for Organics Processing Capacity to be open, objective, and carefully monitored. The following rules will be adhered to and enforced.

Until the SCWMA Board of Directors awards the Organic Materials Processing Services Agreement, all contact between participants, participant's sub-contractors, participant's sub-consultants, participant's affiliates, participants lobbyists, legal or political advisors, or any individual or entity that may be assisting the participant in preparing a response to this request for proposals, or providing work to the participant should participant be selected, and SCWMA, shall be in writing, either by email or mail to:

Patrick Carter
Executive Director, Sonoma County Waste Management Agency
2300 County Center Dr., B-100, Santa Rosa, CA 95403
(707) 565-3579
Patrick.Carter@sonoma-county.org

All communications between the SCWMA and a participant, along with the related responses, will be transmitted simultaneously to all participants that have signed into and attended the MANDATORY pre-proposal conference and will be included as part of the evaluation record.

Any participant who fails to recognize or utilize this process of communication will be notified of its violation and may be subject to disqualification from the selection process at the sole discretion of the SCWMA.

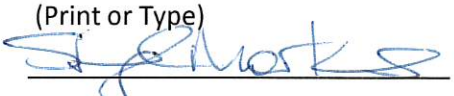
Any attempt to contact or directly interact with any elected or appointed official for the purpose of obtaining information or influencing the Request for Proposal Process, including the selection process, Form A will be grounds for *determination of* non-compliance and disqualification from the selection process.

All participants must acknowledge and sign this statement as part of the RFP process. All participants must provide a signed **ORIGINAL** of this statement by the close of the **MANDATORY** pre-proposal conference. Participants that do not provide this signed statement will be disqualified from this procurement process.

On behalf of my company/agency, I understand and accept the rules established in this statement.

Company Name: Hitachi Zosen Inova USA, LLC
(Print or Type)

Representative: Markus Stangl Title: CEO
(Print or Type)

Signature  Date: 1/12/2018
(Sign in Ink)

Form B
PROPOSER'S STATEMENT OF ORGANIZATION

1. Full Name of Business Concern (Proposer):

   Hitachi Zosen USA, LLC

   Principal Business Address:

   3740 Davinci Court, Suite 250

   Norcross, GA 30092

2. Principal Contact Person(s):

   Name: Thomas Gratz Phone Number: 678-987-2520

3. Form of Business Concern:

   ☒ Corporation ☐ Partnership ☐ Joint Venture Other _____

4 Provide names of partners or offices as appropriate and indicate if the individual has the authority to sign in name of Proposer. Provide proof of the ability of the individuals so named to legally Bind the Proposer (Appendix A).

Name	Address	Title
Markus Stangl	same as above	CEO
Mike Canova	same as above	CFO
Thomas Gratz	same as above	Sales Manager US
William Skinner	same as above	Director of O&M

5. If a corporation, in what state incorporated: Delaware

   Date Incorporated: April (Month) 28th (Day) 2011 (Year)

6. If a Joint Venture or Partnership, date of Agreement: n/a

Form B
PROPOSER'S STATEMENT OF ORGANIZATION

7. List all subcontractors participating in this Organic Materials Processing Services Agreement:

	Name	Address
a)	none – Hitachi Zosen USA, LLC will act as complete EPC provider	
b)	_____	_____
c)	_____	_____
d)	_____	_____

8. Outline specific areas of responsibility for each firm listed in Question 7.

a) n/a

b) _____

c) _____

d) _____

9. Identify the provisions of any agreement between parties which assigns legal or financial liabilities or responsibilities:

n/a

10. If responding firm(s) are a partially or fully-owned subsidiary of another firm, or share common ownership with another firm, please identify the firms and relationships.

Please refer to Appendix B

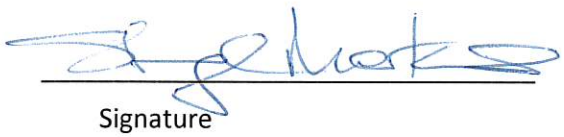
Form C
CERTIFICATION OF NON-GRATUITIES

TO: THE SONOMA COUNTY WASTE MANAGEMENT AGENCY

CERTIFICATION

This is a written certification, signed under penalty of perjury, stating that no persons acting on behalf of Hitachi Zosen Inova USA, LLC has paid, or offered or attempted to pay, any elected or appointed official, officer or employee of the SCWMA any compensation or consideration, in any form whatsoever, in connection with obtaining or entering into this Organic Materials Processing Services Agreement.

Markus Stangl	CEO
Name	Title



Signature

1/12/18

Date

16

Form D
NON-COLLUSION AFFIDAVIT OF PROPOSER and DISCLOSURE OF NON-COMPETE AGREEMENTS

State of **California** County of **San Luis Obispo**

William Skinner, being duly sworn, deposes and says that:

1. He/She is **William Skinner** of **Hitachi Zosen Inova, USA LLC,** the Proposer that has submitted the attached proposal;
2. He/She is fully informed respecting the preparation and contents of the attached proposal and of all pertinent circumstances respecting such proposal;
3. Such proposal is genuine and is not a collusive or sham proposal;
4. Neither said Proposer nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest, including this affiant, has in any way colluded, connived, or agreed, directly or indirectly, with any other Proposer, firm or person to submit a collusive or sham proposal in connection with the Organic Materials Processing Services Agreement for which the attached proposal has been submitted or to refrain from proposing in connection with such Organic Materials Processing Services Agreement, or has in any manner, directly or indirectly, sought by agreement or collision or communication or conference with any other Proposer, firm, or person to fix the price or prices in the attached RFP, or of any other Proposer, or to fix any overhead, profit or cost component of the proposal or the response of any other Proposer, or to secure through any collusion, connivance, or unlawful agreement any advantage against The Sonoma County Waste Management Agency or any person interested in the proposed Organic Materials Processing Services Agreement; and
5. The tipping fee proposal in the attached RFP are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the Proposer or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.
6. Proposer must list the name of any and all other solid waste service providers and/or affiliates that it has a "non-compete" agreement with that prohibits the other solid waste services provider from proposing on services as requested in this RFP. Failure to disclose this information will result in immediate disqualification from this RFP process.

N/A

Form D
NON-COLLUSION AFFIDAVIT OF PROPOSER and
DISCLOSURE OF NON-COMPETE AGREEMENTS

Wallway Shum (Signed)

WEST COAST SALES MANAGER (Title)

Subscribed and sworn to before me this 9th day of JAN, 2018.

See Attached Form

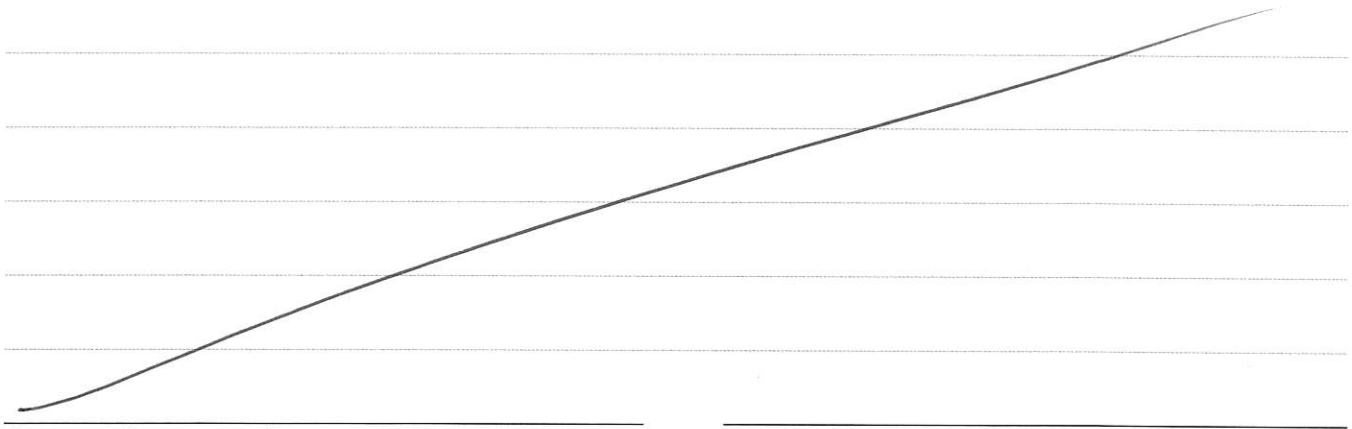
Notary Public, State of California

My Commission Expires: 08/19/2020

CALIFORNIA JURAT WITH AFFIANT STATEMENT

☐ See Attached Document (Notary to cross out lines 1-6 below)
☐ See Statement Below (Lines 1-6 to be completed only by document signer(s), not Notary)

1
2
3
4
5
6



Signature of Document Signer No. 1

Signature of Document Signer No. 2

A Notary Public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California

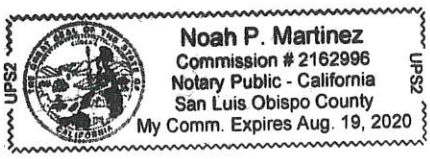
County of San Luis Obispo

Subscribed and sworn to (or affirmed) before me on this 9 day of January, 2018, by

(1) William Skinner
Name of Signer
proved to me on the basis of satisfactory evidence be the person who appeared before me (.) (,)

(and

(2) _____
Name of Signer
proved to me on the basis of satisfactory evidence be the person who appeared before me.)



Place Notary Seal Above

Signature Noah P. Martinez
Signature of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

Further Description of Any Attached Document

Title or Type of Document: Affidavit

Document Date: 1/9/18 Number of Pages: 2

Signer(s) Other Than Named Above: N/A

RIGHT THUMBPRINT OF SIGNER	RIGHT THUMBPRINT OF SIGNER

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Form E
ORGANIC WASTE TIPPING FEE PROPOSAL
SUMMARY AND SIGNATURE

In preparing the Tipping Fee Proposal Forms Proposers should be aware of the following:

All organic materials processing tipping fees proposed on these forms for ***Sonoma County Waste Management Agency*** shall be fixed through December 31, 2020 or one (1) year after the Effective Date and should reflect service requirements as specified in the Organic Materials Processing Services Agreement.

The Undersigned hereby certifies as follows:

That William Skinner has personally and carefully examined the specifications and instructions for the work to be done as set forth in Sections 1 – 6 of this RFP and the Draft Organic Materials Processing Services Agreement (Attachment A or Attachment B).

That William Skinner has made examination of the services as applicable to the proposal, and fully understand the character of the work to be done.

That, having made the necessary examination, the undersigned hereby proposes to furnish all materials, vehicles, plant, equipment and facilities, and to perform all labor and services which may be required to do said work with the time fixed and upon the terms and conditions provided in the Organic Materials Processing Services Agreement, at the tipping fees set forth on the Tipping Fee Proposal Forms set forth below:

PROPOSER	William Skinner
President/Partner/Owner	Markus Stangl
Secretary	Michael Canova
Firm Name	Hitachi Zosen Inova, USA, LLC

Individual: ☐ Partnership: ☐ Joint Venture ☒Corporation, A Delaware Corporation (State of Incorporation)

Signature Instructions:

If business is a CORPORATION, name of the corporation should be listed in full and both President and Secretary must sign the form, OR if one signature is permitted by corporation by-laws, a copy of the by-laws shall be furnished to the SCWMA as part of the proposal.

If business is a PARTNERSHIP, the full name of each partner should be listed followed by d/b/a (doing business as) and firm or trade name; any one partner may sign the form. If the business is INDIVIDUAL PROPRIETORSHIP, the name of the owner should appear followed by d/b/a and name of the company.

If business is a JOINT VENTURE, the full name of each joint venturer should be listed in full and

Form E
ORGANIC WASTE TIPPING FEE PROPOSAL
SUMMARY AND SIGNATURE

each joint venturer must sign the form, OR if one signature is permitted by the joint venture agreement or by-laws, a copy of the agreement or by-laws shall be furnished to the SCWMA as part of the proposal.

Signature: _____ CEO ___ Date 1/12/18

Signature: _____ Secretary Date 1/12/18

Form F
ORGANIC WASTE TIPPING FEE PROPOSAL

Form F is provided in an Excel spreadsheet, Attachment C SCWMA RFP Section 6 Form F Excel.

Form F shall be submitted in hard copy format and via USB drive in Microsoft Excel format.

Form F-4 20-Year Term on following page

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Form G
PASS/FAIL REQUIREMENTS

PROPOSER NAME: Hitachi Zosen Inova USA, LLC
(name of the entity that will sign the Organic Materials Processing Services Agreement in the event one is awarded)

Key Contact Information

Name: Thomas Gratz

Title: Sales Manager US

Address: 3740 Davinci Court, Suite 250, Norcross, GA 30092

Telephone Number: 678-987-2520

Fax Number: Thomas.gratz@hz-inova.com

Required Attachments:

Each Proposer must include the following attachments in the separate sealed "Pass/Fail Requirements" envelope:

A copy of Form A Communication Protocol, as completed on the date of the **MANDATORY** pre-proposal conference.

A written statement acknowledging receipt of any and all addenda to this RFP document, and a signed copy of each addendum with the date of receipt clearly displayed next to each signature.

The **Proposal Bond of $25,000**.

A letter from Proposer's bank/financial institution clearly stating that the Proposer has adequate assets and/or irrevocable line of credit that is sufficient to compensate for all required payments to the SCWMA, capital costs, equipment costs, start-up costs, and a minimum of three (3) months' operating costs.

The Undersigned hereby certifies as follows (initial next to each statement)**:**

___ The Proposer has attended the **MANDATORY** pre-proposal conference held on June 28, 2017 at 11:00 a.m. PDT.

___ The Proposer certifies that Proposer has personally and carefully examined the specifications and instructions for the work to be done as set forth in Sections 1 – 6 of this RFP.

___ The Proposer certifies that Proposer has personally and carefully examined the specifications and requirements as set forth in the Draft Organic Materials Processing Services Agreement.

___ The Proposer certifies that Proposer has personally and carefully examined the specifications and requirements of the ***Sonoma Countywide Integrated Waste Management Plan***.

___ The Proposer certifies that Proposer has personally and carefully examined the specifications and requirements of the ***Sonoma County Waste Management Agency Joint Exercise of Powers Agreement***, and all subsequent amendments.

___ The Proposer certifies that Proposer has made an examination of the services as applicable to

Form G
PASS/FAIL REQUIREMENTS

the proposal, and fully understands the character of the work to be done.

_____ The Proposer warrants that the requirements of the Draft Organic Materials Processing Services Agreement as described in this RFP, its enclosures, and all addenda have been thoroughly reviewed and the Proposer has conducted all due diligence necessary to confirm material facts upon which the proposal is based.

_____ (For long-term Agreements only) The Proposer agrees to submit a **Performance Bond** in the amount of **One Million Dollars ($1,000,000)** effective within ten (10) calendar days from the date the SCWMA Board approves the Agreement(s).

_____ The Proposer acknowledges the validity of the proposal contents, including proposed Organic Materials Processing Tipping Fees and pricing for a period of one hundred eighty (180) days from the proposal due date.

Having made the necessary examination, the undersigned hereby proposes to furnish all materials, vehicles, plant, equipment, and facilities, and to perform all labor and services which may be required to do said work within the time fixed and upon the terms and conditions provided in the Organic Materials Processing Services Agreement, at the tipping fees set forth on Form F:

PROPOSER NAME Hitachi Zosen Inova USA, LLC
(name of the entity that will sign the Organic Materials Processing Services Agreement)

President/Partner/Owner Markus Stangl - CEO

Secretary Michael Canova

Firm Name Hitachi Zosen Inova USA, LLC

Individual: ☐ Partnership: ☐ Joint Venture: ☒Corporation, A Delaware Corporation (State of Incorporation)

Signature _____ CEO _____ Secretary

Date 1/12/18

Signature Instructions:

If business is a CORPORATION, name of the corporation should be listed in full and both President and Secretary must sign the form, OR if one signature is permitted by corporation by-laws, a copy of the by-laws shall be furnished to the SCWMA as part of the proposal.

If business is a PARTNERSHIP, the full name of each partner should be listed followed by d/b/a (doing business as) and firm or trade name; any one partner may sign the form. If the business is INDIVIDUAL PROPRIETORSHIP, the name of the owner should appear followed by d/b/a and name of the company.

If business is a JOINT VENTURE, the full name of each joint venturer should be listed in full and each joint venturer must sign the form, OR if one signature is permitted by the joint venture agreement or by-laws, a copy of the agreement or by-laws shall be furnished to the SCWMA as part of the proposal.

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R	San Luis Obispo Sample Permit

Appendix A

Hitach
INOVA

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USA
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AUTHORIZATION LETTER

To Whom it May Concern:

By means of this letter, I, Michael Canova, Secretary of Hitachi Zosen Inova USA LLC, a
Thomas Gratz, Sales Manager US and William Skinner, Director of O & M Management
behalf of the company for the Sonoma County Waste Management Agency request for pro
organics processing capacity.

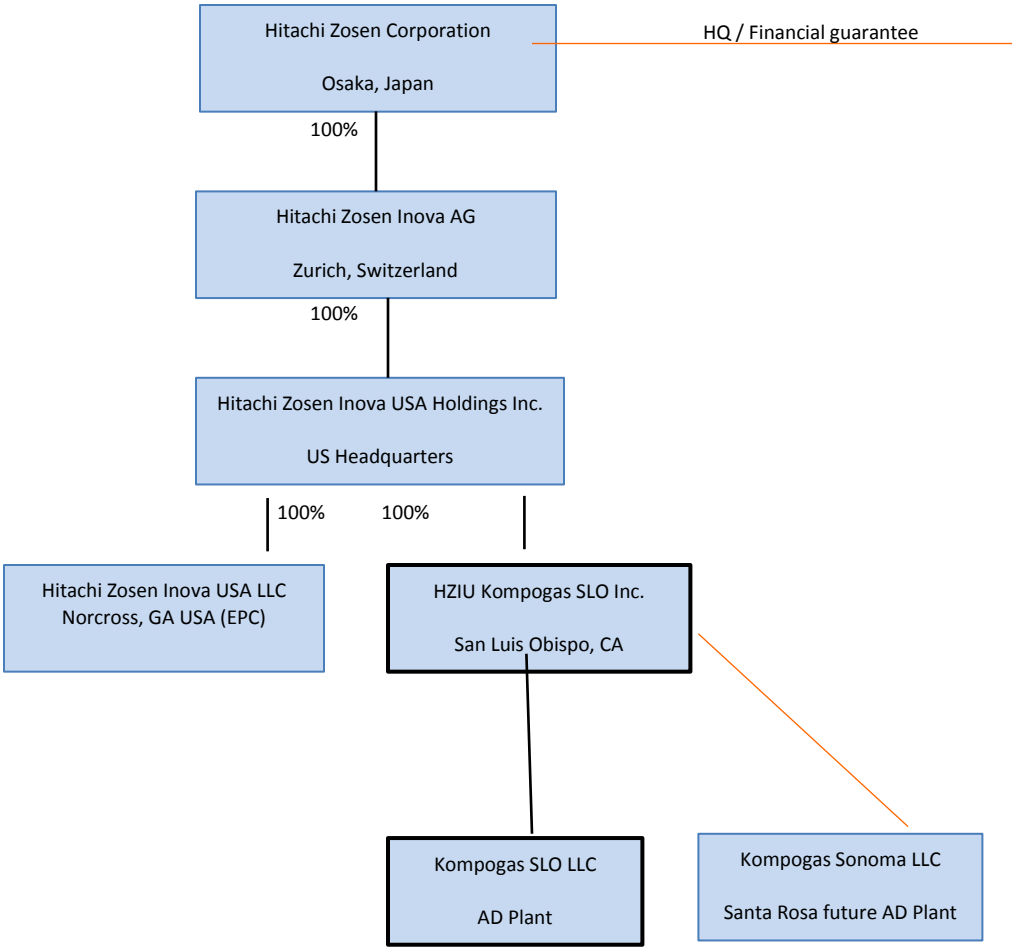
Acknowledged and agreed:

Michael Canova / Officer & Secretary

Date: January 2, 2018

Appendix B

Organization Chart (Partial)

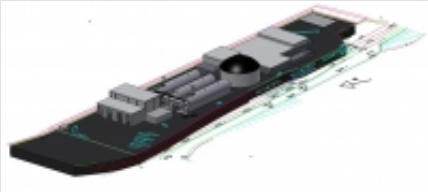


APPENDIX C

Energy from Waste Reference Projects

Kompogas® Anaerobic Digestion Plants (all)

in chronological order



SE, Högbytorp

Start of operation	2018	
Anaerobic Digestion	Number of Digester(s)	3
	Net volume per digester	2100 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Food Waste, Green Waste, Solid Manure
	Waste Throughput per Year	83050 t/a
	Biogas Utilisation	Biomethane for gas-grid injection

IT, Bologna

Start of operation	2018	In planning phase
Anaerobic Digestion	Number of Digester(s)	4
	Net volume per digester	1800 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	102000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection

FR, Tarbes

Start of operation	2017	In planning phase
Anaerobic Digestion	Number of Digester(s)	3
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Organic Fraction of Municipal Solid Waste, Green Waste
	Waste Throughput per Year	35000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection

PL, Jarocin

Start of operation	2015	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	RM18
	Waste Type	Organic Fraction of Municipal Solid Waste
	Waste Throughput per Year	15000 t/a
	Biogas Utilisation	Combined Heat and Power

PL, Olawa

Start of operation	2014	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	RM18
	Waste Type	Organic Fraction of Municipal Solid Waste
	Waste Throughput per Year	25000 t/a
	Biogas Utilisation	Combined Heat and Power

CH, Winterthur

Start of operation	2014	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1500 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Food Waste, Green Waste
	Waste Throughput per Year	25000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection

CH, Vétroz

Start of operation	2014	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Green Waste, Liquid Manure, Waste Oil
	Waste Throughput per Year	20000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection

PT, Amarsul

Start of operation	2014	
Anaerobic Digestion	Number of Digester(s)	3
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Organic Fraction of Municipal Solid Waste
	Waste Throughput per Year	60000 t/a
	Biogas Utilisation	Combined Heat and Power

JP, Nantan

Start of operation	2013	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1030 m3
	Digester Design	Steel
	Waste Type	Organic Fraction of Municipal Solid Waste
	Waste Throughput per Year	10800 t/a
	Biogas Utilisation	Combined Heat and Power

DE, Coesfeld

Start of operation	2013	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	40000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection

DE, Fulda

Start of operation	2013	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	32000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection

NL, Tilburg

Start of operation	2013	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	46000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection

CH, Zurich Werdhölzli

Start of operation	2013	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1500 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Food Waste, Green Waste
	Waste Throughput per Year	25000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection

FR, Clermont-Ferrand

Start of operation	2013	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	15000 t/a
	Biogas Utilisation	Combined Heat and Power

JP, Hofu

Start of operation	2013	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	750 m3
	Digester Design	Steel
	Waste Type	Organic Fraction of Municipal Solid Waste
	Waste Throughput per Year	17500 t/a
	Biogas Utilisation	Combined Heat and Power

DE, Witten

Start of operation	2012	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	26300 t/a
	Biogas Utilisation	Combined Heat and Power

DE, Trittau

Start of operation	2012	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste
	Waste Throughput per Year	20000 t/a
	Biogas Utilisation	Combined Heat and Power

IT, Faedo

Start of operation	2012	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	32000 t/a
	Biogas Utilisation	Combined Heat and Power

IT, Terni

Start of operation	2012	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	17500 t/a
	Biogas Utilisation	Combined Heat and Power

NL, Weurt

Start of operation	2012	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	38000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection

IT, Novi Ligure

Start of operation	2012	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	16800 t/a
	Biogas Utilisation	Combined Heat and Power

FR, Vannes

Start of operation	2012	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Organic Fraction of Municipal Solid Waste
	Waste Throughput per Year	15000 t/a
	Biogas Utilisation	Combined Heat and Power

FR, Angers

Start of operation	2012	
Anaerobic Digestion	Number of Digester(s)	4
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Organic Fraction of Municipal Solid Waste
	Waste Throughput per Year	50000 t/a
	Biogas Utilisation	Combined Heat and Power

FR, Forbach

Start of operation	2011	
Anaerobic Digestion	Number of Digester(s)	3
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	42000 t/a
	Biogas Utilisation	Combined Heat and Power

IT, Belluno

Start of operation	2011	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Food Waste, Green Waste
	Waste Throughput per Year	22000 t/a
	Biogas Utilisation	Combined Heat and Power

Hitachi Zosen INOVA

DE, Ennigerloh

Start of operation	2011	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	21000 t/a
	Biogas Utilisation	Combined Heat and Power

DE, Backnang-Neuschöntal

Start of operation	2011	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	36000 t/a

CH, Wauwil

Start of operation	2011	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	16000 t/a
	Biogas Utilisation	Combined Heat and Power

CH, Chavornay

Start of operation	2011	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1500 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Food Waste, Green Waste
	Waste Throughput per Year	23000 t/a
	Biogas Utilisation	Combined Heat and Power

DE, Ingolstadt

Start of operation	2011	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	20000 t/a
	Biogas Utilisation	Combined Heat and Power

Hitachi Zosen INOVA

DE, Aurich-Grossefehn

Start of operation	2010	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	18000 t/a
	Biogas Utilisation	Combined Heat and Power

NL, Rijsenhout

Start of operation	2010	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	42000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection, Biogas Filling Station

CH, Villeneuve

Start of operation	2010	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Food Waste, Green Waste
	Waste Throughput per Year	20000 t/a
	Biogas Utilisation	Combined Heat and Power

NL, Zwolle

Start of operation	2010	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	2 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	45000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection

CH, Altdorf

Start of operation	2009	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	340 m3
	Digester Design	Steel
	Waste Type	Food Waste, Green Waste
	Waste Throughput per Year	5000 t/a
	Biogas Utilisation	Combined Heat and Power

Hitachi Zosen INOVA

ES, Botarell

Start of operation	2009	
Anaerobic Digestion	Number of Digester(s)	3
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Organic Fraction of Municipal Solid Waste
	Waste Throughput per Year	54000 t/a
	Biogas Utilisation	Combined Heat and Power

QA, Doha

Start of operation	2009	
Anaerobic Digestion	Number of Digester(s)	15
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Green Waste, Organic Fraction of Municipal Solid Waste
	Waste Throughput per Year	274000 t/a
	Biogas Utilisation	Combined Heat and Power

CH, Oensingen

Start of operation	2009	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Food Waste, Green Waste
	Waste Throughput per Year	18000 t/a
	Biogas Utilisation	Combined Heat and Power

FR, Saint Lô

Start of operation	2009	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Green Waste, Organic Fraction of Municipal Solid Waste
	Waste Throughput per Year	22000 t/a
	Biogas Utilisation	Combined Heat and Power

CH, Volketswil

Start of operation	2009	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Food Waste, Green Waste
	Waste Throughput per Year	20000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection, Combined Heat and Power

Hitachi Zosen INOVA

DE, Flörsheim Wicker

Start of operation	2008	
Anaerobic Digestion	Number of Digester(s)	3
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	GG20
	Waste Type	Bio Waste, Food Waste, Green Waste
	Waste Throughput per Year	45000 t/a
	Biogas Utilisation	Combined Heat and Power

CH, Klingnau

Start of operation	2008	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	GG20
	Waste Type	Bio Waste, Food Waste, Green Waste, Liquid Waste
	Waste Throughput per Year	20000 t/a
	Biogas Utilisation	Combined Heat and Power

CH, Lavigny

Start of operation	2008	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	960 m3
	Digester Design	Concrete
	Digester Type	GG16
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	16000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection

FR, Montpellier

Start of operation	2008	
Anaerobic Digestion	Number of Digester(s)	8
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Organic Fraction of Municipal Solid Waste
	Waste Throughput per Year	100000 t/a
	Biogas Utilisation	Combined Heat and Power

CH, Inwil

Start of operation	2008	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	960 m3
	Digester Design	Concrete
	Digester Type	GG16
	Waste Type	Bio Waste, Green Waste, Liquid Manure, Liquid Waste, Solid Manure
	Waste Throughput per Year	16000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection, Combined Heat and Power

Hitachi Zosen INOVA

NL, Wilp-Achterhoeck

Start of operation	2008	
Anaerobic Digestion	Number of Digester(s)	4
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	PF1300
	Waste Type	Bio Waste, Green Waste, Liquid Waste
	Waste Throughput per Year	60000 t/a
	Biogas Utilisation	Combined Heat and Power

DE, Amtzell

Start of operation	2007	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	GG20
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	18000 t/a
	Biogas Utilisation	Combined Heat and Power

DE, Gröbern

Start of operation	2007	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	GG20
	Waste Type	Energy Crops
	Waste Throughput per Year	17000 t/a
	Biogas Utilisation	Combined Heat and Power

DE, Ilbenstadt

Start of operation	2007	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	GG20
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	18250 t/a
	Biogas Utilisation	Combined Heat and Power

Hitachi Zosen INOVA

CH, Oetwil am See 2

Start of operation	2007	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	340 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Food Waste, Green Waste
	Waste Throughput per Year	5000 t/a
	Biogas Utilisation	Combined Heat and Power

DE, Regen

Start of operation	2007	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	GG20
	Waste Type	Bio Waste, Energy Crops, Green Waste
	Waste Throughput per Year	18000 t/a
	Biogas Utilisation	Combined Heat and Power

DE, Rostock

Start of operation	2007	
Anaerobic Digestion	Number of Digester(s)	3
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	RM18
	Waste Type	Organic Fraction of Municipal Solid Waste
	Waste Throughput per Year	40000 t/a
	Biogas Utilisation	Combined Heat and Power

CH, Utzenstorf

Start of operation	2007	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	720 m3
	Digester Design	Concrete
	Digester Type	GG12
	Waste Type	Bio Waste, Green Waste, Liquid Waste
	Waste Throughput per Year	12000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection, Combined Heat and Power

CH, Aarberg

Start of operation	2006	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	GG20
	Waste Type	Bio Waste, Food Waste, Green Waste
	Waste Throughput per Year	20000 t/a
	Biogas Utilisation	Combined Heat and Power

CH, Langenthal

Start of operation	2006	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	240 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	5600 t/a
	Biogas Utilisation	Combined Heat and Power

CH, Ottenbach

Start of operation	2006	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	960 m3
	Digester Design	Concrete
	Digester Type	GG16
	Waste Type	Bio Waste, Food Waste, Green Waste
	Waste Throughput per Year	16000 t/a
	Biogas Utilisation	Combined Heat and Power

CH, Pratteln

Start of operation	2006	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	960 m3
	Digester Design	Concrete
	Digester Type	GG16
	Waste Type	Bio Waste, Food Waste, Green Waste
	Waste Throughput per Year	15000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection

DE, Reimlingen

Start of operation	2006	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	GG20
	Waste Type	Energy Crops
	Waste Throughput per Year	27000 t/a
	Biogas Utilisation	Combined Heat and Power

DE, Weissenfels 2

Start of operation	2006	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	960 m3
	Digester Design	Concrete
	Digester Type	GG16
	Waste Type	Bio Waste, Crop Residues
	Waste Throughput per Year	14500 t/a
	Biogas Utilisation	Combined Heat and Power

Hitachi Zosen INOVA

CH, Jona

Start of operation	2005	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	330 m3
	Digester Design	Concrete
	Digester Type	ZAFE
	Waste Type	Bio Waste, Food Waste, Green Waste
	Waste Throughput per Year	5000 t/a
	Biogas Utilisation	Combined Heat and Power

ES, La Rioja

Start of operation	2005	
Anaerobic Digestion	Number of Digester(s)	6
	Net volume per digester	1050 m3
	Digester Design	Concrete
	Digester Type	ZAFB
	Waste Type	Organic Fraction of Municipal Solid Waste
	Waste Throughput per Year	75000 t/a
	Biogas Utilisation	Combined Heat and Power

CH, Lenzburg

Start of operation	2005	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	340 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Food Waste, Green Waste, Liquid Waste
	Waste Throughput per Year	5000 t/a
	Biogas Utilisation	Combined Heat and Power

MQ, Martinique

Start of operation	2005	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	750 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	20000 t/a
	Biogas Utilisation	Combined Heat and Power

CH, Uzwil 2

Start of operation	2005	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	ZAFB
	Waste Type	Bio Waste, Food Waste, Green Waste, Liquid Waste
	Waste Throughput per Year	20000 t/a
	Biogas Utilisation	Combined Heat and Power

JP, Kyoto 1

Start of operation	2004	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	1150 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Food Waste
	Waste Throughput per Year	15000 t/a
	Biogas Utilisation	Combined Heat and Power

DE, Passau

Start of operation	2004	
Anaerobic Digestion	Number of Digester(s)	3
	Net volume per digester	980 m3
	Digester Design	Concrete
	Digester Type	ZAFB
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	39000 t/a
	Biogas Utilisation	Combined Heat and Power

CH, Bachenbülach 2

Start of operation	2003	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	340 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Food Waste, Green Waste
	Waste Throughput per Year	10000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection, Combined Heat and Power

DE, Weissenfels 1

Start of operation	2003	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	980 m3
	Digester Design	Concrete
	Digester Type	ZAFB
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	12500 t/a
	Biogas Utilisation	Combined Heat and Power

CH, Oetwil am See 1

Start of operation	2001	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	750 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Food Waste, Green Waste, Liquid Waste
	Waste Throughput per Year	10000 t/a
	Biogas Utilisation	Combined Heat and Power

AT, Roppen

Start of operation	2001	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	750 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	10000 t/a
	Biogas Utilisation	Combined Heat and Power

DE, Alzey-Worms

Start of operation	1999	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	840 m3
	Digester Design	Concrete
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	24000 t/a
	Biogas Utilisation	Combined Heat and Power

DE, Frankfurt am Main

Start of operation	1999	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	1300 m3
	Digester Design	Concrete
	Digester Type	ZAM
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	20000 t/a
	Biogas Utilisation	Combined Heat and Power

JP, Kyoto Demo

Start of operation	1999	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	100 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Food Waste
	Waste Throughput per Year	1000 t/a
	Biogas Utilisation	Combined Heat and Power

CH, Uzwil 1

Start of operation	1998	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	410 m3
	Digester Design	Concrete
	Digester Type	ZAH
	Waste Type	Bio Waste, Green Waste, Liquid Waste
	Waste Throughput per Year	10500 t/a
	Biogas Utilisation	Combined Heat and Power

Hitachi Zosen INOVA

DE, Braunschweig

Start of operation	1997	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	840 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	20000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection

DE, Hunsrück

Start of operation	1997	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	840 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	13000 t/a
	Biogas Utilisation	Combined Heat and Power

AT, Lustenau

Start of operation	1997	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	575 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	17000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection

DE, München-Erding

Start of operation	1997	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	840 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	32000 t/a
	Biogas Utilisation	Combined Heat and Power

CH, Otelfingen

Start of operation	1996	
Anaerobic Digestion	Number of Digester(s)	1
	Net volume per digester	840 m3
	Digester Design	Concrete
	Digester Type	ZAH
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	12500 t/a
	Biogas Utilisation	Biomethane for gas-grid injection, Combined Heat and Power

CH, Samstagern

Start of operation	1995	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	260 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Food Waste, Green Waste
	Waste Throughput per Year	10000 t/a
	Biogas Utilisation	Biomethane for gas-grid injection, Combined Heat and Power

DE, Kempten

Start of operation	1995	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	260 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Green Waste
	Waste Throughput per Year	12500 t/a
	Biogas Utilisation	Combined Heat and Power

CH, Bachenbülach 1

Start of operation	1994	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	260 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Food Waste, Green Waste
	Waste Throughput per Year	10500 t/a
	Biogas Utilisation	Biomethane for gas-grid injection, Combined Heat and Power

CH, Rümlang

Start of operation	1991	
Anaerobic Digestion	Number of Digester(s)	2
	Net volume per digester	340 m3
	Digester Design	Steel
	Waste Type	Bio Waste, Food Waste, Green Waste
	Waste Throughput per Year	8500 t/a
	Biogas Utilisation	Biomethane for gas-grid injection, Combined Heat and Power, Biogas Filling Station

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Bank of Tokyo-Mitsubishi UFJ
MUFG

January 11, 2018

To: Sonoma County Waste Management Agency

Re: Hitachi Zosen Inova U.S.A. LLC (US subsidiary of Hitachi Zosen Corporation, HQ in Osaka, Japan)

At the request of our client, Hitachi Zosen Corporation, whose registered office is located at 7-89, Nanko-kita, 1-chome, Suminoe-ku, Osaka, Japan, we are pleased to inform you of the following:

Hitachi Zosen Corporation has maintained an account with us since August 1, 1963. Their deposit balance with us is ¥21,146 million, and loan balance is ¥23,436 million as of March 31, 2017.
We provide Hitachi Zosen Corporation with revolving credit facility in the total commitment amount of JPY20Billion.

We are interested in making additional credit facilities available upon their request for the project, in the event of Hitachi Zosen Corporation being awarded the Kompogas Sonoma AD project contract.

Such facilities are subject to our conducting a credit review of the project and our finding that all the necessary requirements are met.

This letter shall not be construed as a commitment, guarantee nor warranty, or otherwise to have any legally binding effect to our bank.

Yours faithfully,

The Bank of Tokyo-Mitsubishi UFJ, Ltd.
Corporate Banking Department No.2
Osaka Corporate Banking Division No. 3
Osaka Corporate Banking Group

Authorized signature
Kenji Iijima, Chief Manager

Appendix E - Part 1 of 2

Hitachi Zosen Inova

2016 Annual Report

Integrated Waste Treatment Solutions

Content | Key Figures

Waste is our Energy.
Engineering is our Business.
Sustainable Solutions are our Mission.

Hitachi Zosen Inova AG is a global leader in energy from waste, operating as part of the Hitachi Zosen Corporation Group. We act as an engineering, procurement and construction (EPC) contractor delivering complete turnkey plants and system solutions for energy recovery from waste.

Hitachi Zosen Inova AG

(in CHF thousand)	2015*	2016**
Order intake	609,285	73,920
Order backlog	662,044	189,418
Net revenues	530,797	501,872
EBITDA	28,852	11,815
EBIT	26,343	8,086
Net income	6,706	7,749
Share capital	40,000	40,000
Net assets	38,655	44,133
Total assets	259,149	250,320
Equity ratio	15 %	18 %
Headcount	574	628

* April 1, 2014 – March 31, 2015 ** April 1, 2015 – March 31, 2016

Ladies and Gentlemen

Hitachi Zosen Inova started the fiscal year, ended March 2016, with a substantial backlog of orders that needed to be delivered to our clients, and our primary focus was therefore on project execution and performance improvement.

Thanks to the contract award from Syctom for Ivry – the next large EfW plant in Paris – and significant service activities we were able to maintain our leading market position. In July 2015, we handed over Ferrybridge to the client with a net energy efficiency of over 31%, which was an excellent result. We have received engineering contracts for the new UK project Edinburgh and the order booking for Ferrybridge 2 was secured in June 2016.

The integration of the Kompogas® technology and the AD Team is well on track, with a substantial pipeline of prospects in the global market. With the contract for the Kompogas® plant in Bologna, we started the execution of the largest dry AD plant in Europe. Meanwhile, Hitachi Zosen Inova BioMethan GmbH and Hitachi Zosen Inova Kraftwerkstechnik GmbH both had a successful first year as part of our group.

We have further strengthened our capabilities and resources, allowing us to deliver the solutions needed by our globally active partners.

Yours sincerely,

Minoru Furukawa
Chairman
Hitachi Zosen Corporation

Franz-Josef Mengede
CEO
Hitachi Zosen Inova AG

Insight & Outlook

Review

There was a further decline in the number of projects awarded in Europe last year, continuing the trend from 2014, but HZI was nonetheless able to maintain its leading market position. We have been pre-selected for a number of projects due to be released, opening up the possibility of securing engineering orders going forward.

Having strengthened our Engineering, Civil, Project Management, and Service offerings, we were well-positioned to handle the projects in execution and so bolster confidence among our customers in our ability to deliver.

The positioning of our biogas and biomethane upgrading businesses has been well received in the market, and we see substantial growth opportunities in these areas.

All projects under execution are progressing well, with our increased process and civil engineering capabilities making a positive contribution.

We maintained our keen focus on R&D to further improve the energy efficiency, material recovery, and cost effectiveness of our solutions.

The negative market trend in energy production prices has continued, and this calls for flexible solutions such as CHP as well as affordable efficiency improvements.

Outlook

Our vast installed capacity provides ample opportunity for modernization, bringing best practice performance from recent developments into play.

Notice to proceed for the significant Ferrybridge Multifuel 2 project in June 2016 has proven our role as a reliable EPC contractor in the UK, which is still one of our most important markets. With a number of promising projects ahead, we are confident of strengthening our position in the UK and successfully obtain further projects in FY 2016/2017.

Some very important research and development activities in the domain of material recovery have been successfully implemented and are now undergoing an intensive test. First results have been satisfying and we look forward to implementing further installations.

The globalization of the EfW and AD market is continuing, and we are addressing this with our multinational engineering and execution teams and globalized sourcing of supplies and services.

With our services delivering first-class resource recovery plants, we are ideally placed to support our partners in their local and global activities.

Executive & Supervisory Boards

Axel Greschitz
CFO
Member of the Executive Board

Katsuhisa Tsuji
CTO
Member of the Executive and Supervisory Board

Franz-Josef Mengede
CEO
Member of the Executive and Supervisory Board

Koichiro Anzai
Chairman of the Supervisory Board

Atsuhiro Idogaki
Member of the Supervisory Board

Hitachi Zosen Corporation

Head Office, Osaka, Japan

Despite the weak global economic outlook, Hitachi Zosen Corporation (HZC) continued to enjoy steady growth in the fiscal year ended March 31, 2016 with the Environment Systems and Industrial Plant businesses leading the way. The company's overall performance was further bolstered by a sizable order in the Middle East booked by the Desalination plant business.

The Japanese economy showed signs of recovery in the first half of the fiscal year ended March 31, 2016, but subsequently slowed down as it was impacted by rising uncertainty and geopolitical tensions weighing on economies worldwide. In spite of the challenging economic background, Hitachi Zosen Corporation maintained steady growth in the second year of its three-year management business plan "Hitz Vision II". Order intake totaled JPY 435.4 billion (CHF 3,730 million), slightly below the targeted JPY 450 billion (CHF 3,855 million). However, revenues came in at JPY 387.0 billion (CHF 3,315 million), more than 110 % of the Hitz Vision II figure. Operating profit (+17.9 % to JPY 15.1 billion/ CHF 129 million) and net profit (+14.7 % to JPY 5.8 billion/CHF 50 million) both posted double-digit growth year-on-year, but still lagged behind the Hitz Vision II budget.

Environment Systems and Industrial Plant

Order intake decreased by 9.9 % year-on-year to JPY 283.7 billion (CHF 2,430 million) owing to the delay in closing several large EfW projects in Europe. The Desalination plant business picked up sharply as HZC was awarded a second order in Qatar. The new order for a Multi-Stage Flash/Reverse Osmosis (MSF/RO) process desalination plant with a treatment volume of 590,000 tonnes per day is the largest plant of this type for HZC. Meanwhile, with steady progress being made on projects in execution, revenues increased by 6.9 % to JPY 241.6 billion (CHF 2,070 million) and operating income was 8.8 % higher at JPY 14.8 billion (CHF 127 million).

Machinery

Although HZC booked JPY 104.5 billion (CHF 895 million) in revenues, on a par with the previous year, operating loss of JPY 864 million (CHF 7 million) was booked due to the impact of an overseas subsidiary's loss-making operations.

Infrastructure

Thanks to increased revenues of JPY 30.8 billion (CHF 264 million), coupled with the implementation of structural reforms, operating results were up to JPY 432 million (CHF 4 million), this compared with the loss recorded in the previous fiscal year.

Other Segments

Other segments – namely transportation, warehousing, and port cargo handling – posted revenues of JPY 10.1 billion (CHF 87 million), with operating profit coming in at JPY 752 million (CHF 6 million).

Financial Situation

Consolidated total assets fell by JPY 7.2 billion (CHF 62 million) to JPY 401.6 billion (CHF 3,440 million) attributable mainly to a decrease in cash and cash equivalents of JPY 10.8 billion (CHF 93 million). Consolidated total liabilities fell by JPY 10.3 billion (CHF 88 million) to JPY 281.0 billion (CHF 2,407 million), reflecting the reduction in interest-bearing debt of JPY 14.2 billion (CHF 122 million). Meanwhile, shareholders' equity increased to JPY 114.2 billion (CHF 978 million), adding to the net profit for the period. The equity ratio thus increased to 28.4 % from 26.6 % in the previous year.

Forecast for the Next Fiscal Year

In the next fiscal year, order intake of JPY 450 billion (CHF 3,855 million), revenues of JPY 400 billion (CHF 3,426 million) and a recovery in the Machinery business are expected to push up operating profit, ordinary profit, and net profit to JPY 16 billion (CHF 137 million), JPY 12 billion (CHF 103 million), and JPY 6 billion (CHF 51 million) respectively.

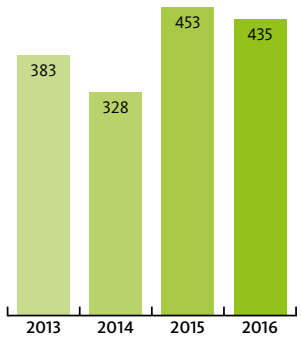
(CHF=JPY 116.74 as of March 31, 2016)

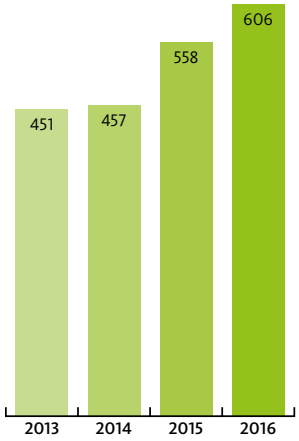
Financial Highlights

Hitachi Zosen Corporation and Consolidated Subsidiaries
For the Fiscal Years Ended March 31, 2015 and 2016

(in JPY million)	2015	2016
Operating results		
Order intake	452,758	435,435
Order backlog	557,786	606,177
Revenues	359,332	387,044
Operating income	12,819	15,113
Net income	5,100	5,849
Cash flows		
Cash flows from operating activities	9,086	8,148
Cash flows from investing activities	(14,680)	(3,666)
Cash flows from financing activities	12,178	(15,948)
Cash and cash equivalents as of fiscal year end	60,770	49,672
Financial position		
Net assets	117,531	120,666
Total assets	408,803	401,649
Investments in property, plant and equipment and intangible assets (account balance)	135,934	127,523
Financial indicators		
Shareholders' equity ratio (%)	26.6	28.4
Debt-equity ratio (times)	1.1	0.9
Workforce as of fiscal year end	9,581	9,825

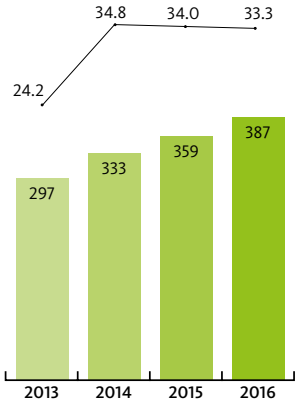
Order intake (JPY billion)





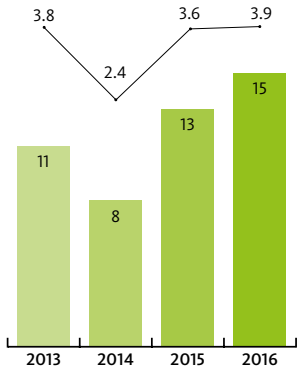
Revenues (JPY billion)

Export ratio (%)



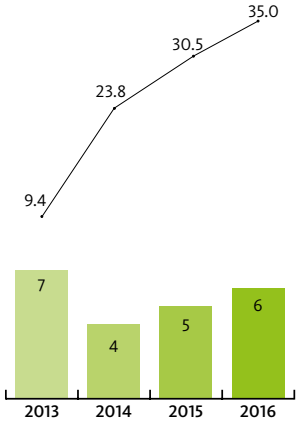
Operating income (JPY billion)

Operating margin (%)



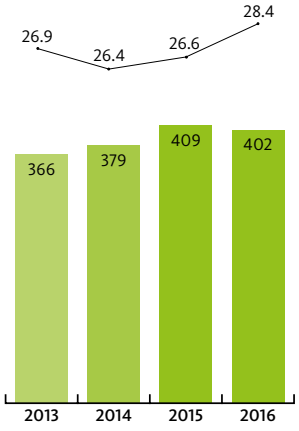
Net income (JPY billion)

Net income per share (JPY)*

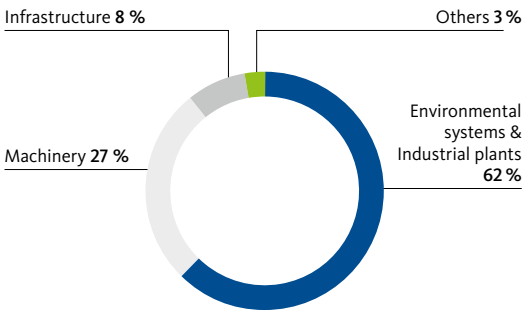


Total assets (JPY billion)

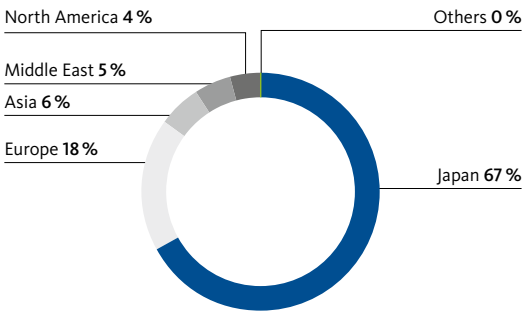
Shareholders' equity ratio (%)



Revenues by segment



Revenues by region



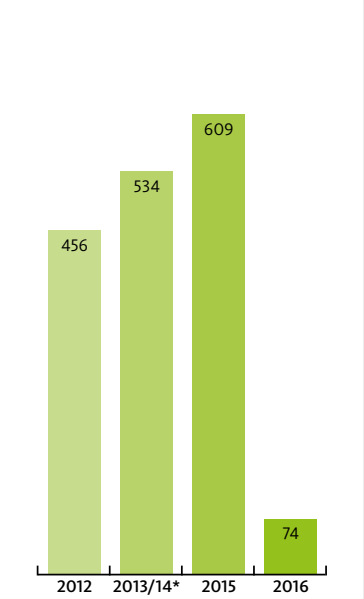
* HZC consolidated common stocks of the company with a ratio of five shares to one share on October 1, 2013

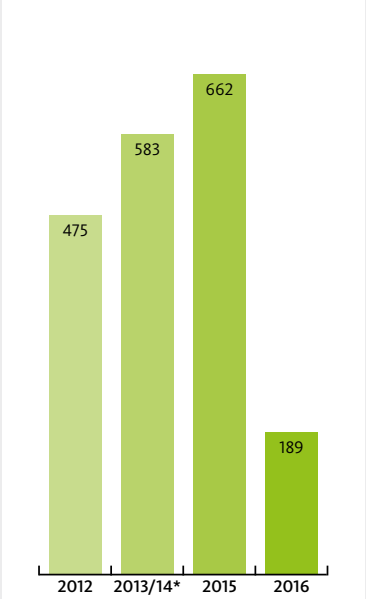
Financial Highlights

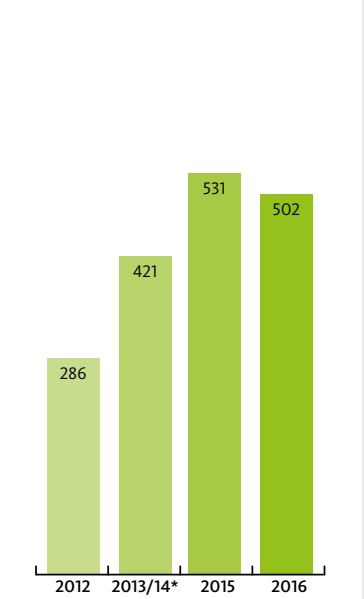
Hitachi Zosen Inova AG

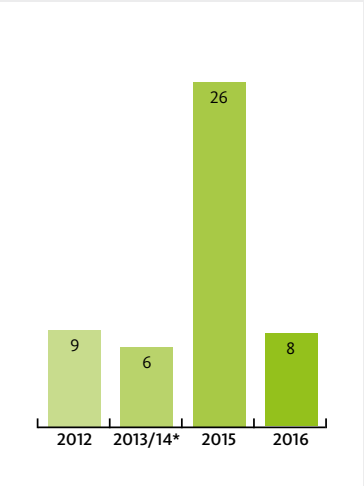
For the Fiscal Years Ended March 31, 2015 and 2016

(in CHF thousand)	2015	2016
Operating results		
Order intake	609,285	73,920
Order backlog	662,044	189,418
Net revenues	530,797	501,872
Operating profit	26,343	8,086
Net income	6,706	7,749
Cash flows		
Cash flows from operating activities	7,944	(24,899)
Cash flows from investing activities	5,439	2,347
Cash flows from financing activities	(502)	(696)
Cash and cash equivalents as of fiscal year end	107,125	86,978
Financial position		
Net assets	38,655	44,133
Total assets	259,149	250,320

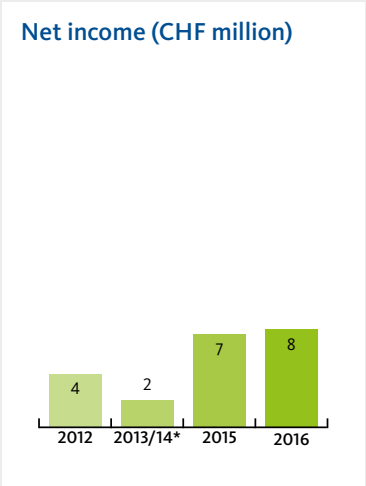




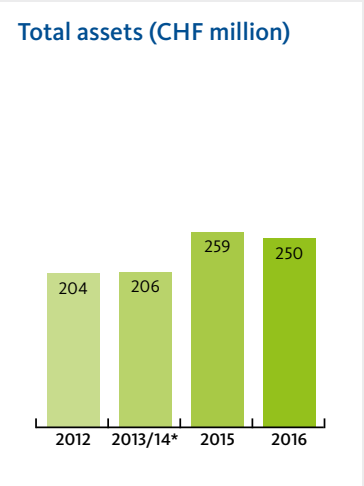




Net income (CHF million)



Total assets (CHF million)



* January 1, 2013 – March 31, 2014

Financial Statements 2015 and 2016 Hitachi Zosen Inova AG

Consolidated Statement of Financial Position*

As at March 31 (in CHF thousand)	2015	2016
Assets		
Cash and cash equivalents	107,125	86,978
Other financial assets	4,920	2,031
Trade and other receivables	10,242	13,474
Construction contracts in progress	97,730	107,120
Inventory	4,783	7,313
Prepayments and accruals	1,866	5,347
Current assets	**226,666**	**222,263**
Other financial assets	6,908	3,208
Property, plant and equipment	8,658	8,608
Intangible assets	13,117	12,840
Deferred tax assets	3,800	3,401
Non-current assets	**32,483**	**28,057**
Total assets	**259,149**	**250,320**

*The consolidated figures stated herein refer to Hitachi Zosen Inova AG according to IFRS standards and were audited as such by KPMG AG.

As at March 31 (in CHF thousand)	2015	2016
Liabilities		
Trade payables	168,186	150,522
Other payables	5,153	4,858
Deferred income/revenues	4,356	5,853
Other financial liabilities	5,422	3,101
Employee benefits	10,804	10,337
Provisions	4,177	6,690
Current income tax payable	650	1,435
Current liabilities	**198,748**	**182,796**
Other financial liabilities	4,089	601
Employee benefits	11,590	16,817
Provisions	5,626	5,604
Deferred tax liabilities	441	369
Non-current liabilities	**21,746**	**23,391**
Total liabilities	**220,494**	**206,187**
Equity		
Share capital	40,000	40,000
Hedging reserves	(1,488)	205
Retained earnings	143	3,928
Total equity attributable to the shareholder of the Company	**38,655**	**44,133**
Total liabilities and equity	**259,149**	**250,320**

*The consolidated figures stated herein refer to Hitachi Zosen Inova AG according to IFRS standards and were audited as such by KPMG AG.

Consolidated Statement of Profit or Loss and Other Comprehensive Income

(in CHF thousand)	2015 (12 months)	2016 (12 months)
Net revenues	**530,797**	**501,872**
Cost of materials and services purchased	(409,513)	(383,600)
Personnel expenses	(66,488)	(80,134)
Other operating expenses	(28,379)	(33,173)
Other operating income	2,435	6,850
Operating profit before depreciation and amortization (EBITDA)	**28,852**	**11,815**
Depreciation and amortization	(2,509)	(3,729)
Operating profit (EBIT)	**26,343**	**8,086**
Finance income	497	4,061
Finance costs	(18,301)	(2,631)
Profit before income tax	**8,539**	**9,516**
Income tax	(1,833)	(1,767)
Profit for the period attributable to the shareholder of the Company	**6,706**	**7,749**
Other comprehensive income		
Effective portion of changes in fair value of cash flow hedges	(85)	982
Net change in fair value of cash flow hedges reclassified to profit or loss	(1,633)	1,161
Foreign currency translation difference	(51)	(104)
Income tax	361	(450)
Items that are or may be reclassified to profit or loss	**(1,408)**	**1,589**
Remeasurements of defined benefit liability (asset)	(14,971)	(4,891)
Income tax	3,131	1,031
Items that will never be reclassified to profit or loss	**(11,840)**	**(3,860)**
Other comprehensive income for the period, net of tax	**(13,248)**	**(2,271)**
Total comprehensive income for the period attributable to the shareholder of the Company	**(6,542)**	**5,478**

Consolidated Statement of Changes in Equity

(in CHF thousand)	Share capital	Hedging reserve	Retained earnings	Equity
Balance as at April 1, 2014	40,000	(131)	5,328	45,197
Profit for the year			6,706	6,706
Other comprehensive income				
Effective portion of changes in fair value of cash flow hedges		(85)		(85)
Net change in fair value of cash flow hedges reclassified to profit or loss		(1,633)		(1,633)
Remeasurements of defined benefit liability (asset)			(14,971)	(14,971)
Foreign currency translation difference			(51)	(51)
Income tax on other comprehensive income		361	3,131	3,492
Total other comprehensive income		**(1,357)**	**(11,891)**	**(13,248)**
Total comprehensive income for the year		**(1,357)**	**(5,185)**	**(6,542)**
Balance as at March 31, 2015	**40,000**	**(1,488)**	**143**	**38,655**
Profit for the year			7,749	7,749
Other comprehensive income				
Effective portion of changes in fair value of cash flow hedges		982		982
Net change in fair value of cash flow hedges reclassified to profit or loss		1.161		1,161
Defined benefit plan actuarial gains (losses)			(4,891)	(4,891)
FX effect			(104)	(104)
Income tax on other comprehensive income		(450)	1,031	581
Total other comprehensive income		**1,693**	**(3,964)**	**(2,271)**
Total comprehensive income for the year		**1,693**	**3,785**	**5,478**
Balance as at March 31, 2016	**40,000**	**205**	**3,928**	**44,133**

Consolidated Statement of Cash Flows

(in CHF thousand)	2015 (12 months)	2016 (12 months)
Profit before tax	8,539	9,516
Adjustment for net finance (income) costs	(343)	(92)
Adjustment for depreciation and amortization	2,509	3,729
Adjustment for non-cash items	(1,721)	(1,525)
Adjustment for exchange differences	14,436	(3,352)
Changes in inventories	(165)	(2,450)
Changes in trade/other accounts receivables	(55,542)	(15,505)
Changes in trade/other accounts payables	34,170	(17,426)
Changes in employee benefits	5,354	(265)
Changes in provisions	570	2,491
Interest received	434	238
Interest paid	(63)	(147)
Income taxes paid	(234)	(111)
Cash flows from operating activities	**7,944**	**(24,899)**
Acquisition of property, plant and equipment	(903)	(1,011)
Acquisition of intangible assets	(2,582)	(1,327)
Acquisition of businesses, net of cash acquired	(9,227)	367
Acquisition of shares		(1,084)
Repayment of loans		5,449
Payment (repayment) of cash collaterals	12,120	(47)
Repayment (purchase) of term money	6,031	
Cash flows from investing activities	**5,439**	**2,347**
Finance lease	(502)	(696)
Cash flows from financing activities	**(502)**	**(696)**
Net increase in cash and cash equivalents	**12,881**	**(23,248)**
Cash and cash equivalents at the beginning of the period	**107,861**	**107,125**
Changes in cash and cash equivalents	12,881	(23,248)
Effects of changes in foreign exchange rates on cash held	(13,617)	3,101
Cash and cash equivalents at the end of the period	**107,125**	**86,978**

Waste is our Energy.
Engineering is our Business.
Sustainable Solutions are our Mission.

Hi chi Z sen
I

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Phone +41 44 277 11 11 | Fax +41 44 277 13 13 | info@hz-inova.com | www.hz-inova.com

Appendix F

City of Santa Rosa

December 7, 2017

William Skinner
West Coast Sales Manager
Hitachi Zosen Inova
3740 Davinci Court, Suite 250
Norcross, GA 30092

Brandon Moffatt
VP- Development
USA LLC StormFisher, Ltd.
1087 Green Valley Road
London, Ontario

Re: Letter of Intent to Negotiate

Dear Mr. Skinner and Mr. Moffatt,

The City of Santa Rosa ("City") is pleased to issue this Letter of Intent to Negotiate (LOI) to StormFisher Ltd and Hitachi Zosen Inova USA LLC. This LOI is based on the City's Board of Public Utilities ("Board") selection of your proposal ("Proposal") which is hereby deemed to include your written proposal, submitted on August 18, 2017, all answers to follow-up questions via email correspondence, and the oral presentations made in response to the City's "Request for Proposals for Location of an Organics Processing Facility on City of Santa Rosa Property" dated July 18, 2017, and all addendum thereto.

The purpose of this LOI is to provide written documentation confirming that you may include the use of City property in your response to the Sonoma County Waste Management Agency's ("Agency") "Request for Proposals for Organic Materials Processing" dated May 31, 2017. If you are successful in the Agency's selection process, the City agrees to enter into an exclusive right of negotiation in an effort to reach an agreement for the use of City property for an organics processing facility in line with the parameters set forth in your Proposal.

Any agreement will require the review and approval of the Board as well as environmental review of the proposed project under the California Environmental Quality Act, and therefore this LOI is only an agreement to negotiate in good faith and not a guarantee of, or commitment to, a final agreement or project approval. This LOI is not a guarantee of selection by the Agency, which is a process separate and apart from the City's process.

Sincerely,

Daniel Galvin
Chair of the Board of Public Utilities

Kompogas® by Hitachi Zosen INOVA

Massbalance

(all units are US units)

Project: Sonoma County CA

Client: Sonoma County

Example/for information only

Variant: Full stream

Originator: M. Burri

Issue: 6/27/2017

Doc-No.: Y-3321 - MB - 5.0 9/20/2017

1. The values given in this Mass Balance are expected values.
2. The total throughput is limited to the specific biogas production per input material and the maximum daily gas production of the digester.
3. Hitachi Zosen Inova is reponsable only for the scope of supply within its interface boundaries.
4. This Mass Balance is subject to possible changes during the start up phase, full operational phase as well as changes in material due to seasonal changes.
5. The absolute ammount of waste an humidificationwater can vary on the input material.

(all "ton" are "short ton")
("scf*" @ 70°F or 21.111°C, 1013.25 mbar, 0% RH)

Input total plant	Design Case 10% FW	20% FW	10% FW, wet	
Total	**70,000**	**70,000**	**70,000**	ton/yr

Pre-treatment

Impurity	Design Case 10% FW	20% FW	10% FW, wet	
Total	1,610	1,820	1,610	ton/yr
	2.3%	2.6%	2.3%	

Input digestion plant	Design Case 10% FW	20% FW	10% FW, wet	
Total	68,390	68,180	68,390	ton/yr
DS	29,446	28,021	26,359	ton/yr
H2O	38,945	40,159	42,032	ton/yr
DM content	43.1%	41.1%	38.5%	

Rain /process water	Design Case 10% FW	20% FW	⅙ FW, wet	
Total	0	0	0	ton/yr
DS	0	0	0	ton/yr
H2O	0	0	0	ton/yr
DM content				

Humidification	Design Case 10% FW	20% FW	⅙ FW, wet	
Total	39,260	32,787	24,560	ton/yr
DS	3,926	3,279	2,456	ton/yr
H2O	35,334	29,508	22,104	ton/yr
DM content	10.0%	10.0%	10.0%	

Feed digester	Design Case 10% FW	20% FW	10% FW, wet	
Total	68,390	68,180	68,390	ton/yr
DS	29,446	28,021	26,359	ton/yr
H2O	38,945	40,159	42,032	ton/yr
DM content	43.1%	41.1%	38.5%	

Composition of digester input	Design Case 10% FW	20% FW	10% FW, wet	
Food Waste	**6,650**	**13,300**	**6,650**	**ton/yr**
TS	25%	25.0%	25.0%	
VS	90%	90.0%	90.0%	
Biogas	4830	4830	4830	scf/ton
Green waste	**61,740**	**54,880**	**61,740**	**ton/yr**
TS	45%	45.0%	40.0%	
VS	60%	60.0%	60.0%	
Biogas	3044	2839	3044	scf/ton

Digester

	Design Case 10% FW	20% FW	10% FW, wet	
No. of digester	**2**	2	2	St.
Usable volume	**3,000**	3,000	3,000	m3
Max. gas prod.	**603,004**	604,862	603,004	scf/d

Biogas production	Design Case 10% FW	20% FW	10% FW, wet	
Total	220,070	220,070	220,070	1000scf/yr
	602,930	**602,930**	**602,930**	**scf/d**
	25,122	25,122	25,122	scf/hr
	419	419	419	SCFM
specific	3,218	3,228	3,218	scf/ton
Lower heating value	502.4	502.4	502.4	btu/scf
Energy yield	110,572,880,477	110,572,880,477	110,572,880,477	btu/yr

Discharge	Design Case 10% FW	20% FW	10% FW, wet	
Total	98,710	92,026	84,010	ton/yr
DS	25,890	23,818	21,333	ton/yr
H2O	72,820	68,208	62,677	ton/yr
DM content	26.2%	25.9%	25.4%	

Cogeneration unit	Design Case 10% FW	20% FW	10% FW, wet	
Electrical Power	1,550	1,550	1,550	kW
electrical Efficiency	41.9%	41.9%	41.9%	expected
thermal Efficiency	40.4%	40.4%	40.4%	expected
Electrical Energy	13,170,660	13,170,660	13,170,660	kWh/yr
Thermal Energy	43,331,300,401	43,331,300,401	43,331,300,401	Btu/yr

Dewatering

Solid Digestate	Design Case 10% FW	20% FW	10% FW, wet	
Total	42,069	37,892	35,870	ton/yr
DS	16,828	15,157	13,631	ton/yr
H2O	25,241	22,735	22,240	ton/yr
DM content	40.0%	40.0%	38.0%	

Liquid Digestate	Design Case 10% FW	20% FW	10% FW, wet	
Total	56,641	54,135	48,139	ton/yr
DS	9,063	8,662	7,702	ton/yr
H2O	47,578	45,473	40,437	ton/yr
DM content	16.0%	16.0%	16.0%	

Decanter

Decanter residue	Design Case 10% FW	20% FW	10% FW, wet	
Total	13,594	12,992	11,553	ton/yr
DS	4,758	4,547	4,044	ton/yr
H2O	8,836	8,445	7,510	ton/yr
DM content	35.0%	35.0%	35.0%	

Decanter effluent	Design Case 10% FW	20% FW	10% FW, wet	
Total	43,047	41,142	36,586	ton/yr
DS	4,305	4,114	3,659	ton/yr
H2O	38,742	37,028	32,927	ton/yr
DM content	10.0%	10.0%	10.0%	

Surplus Liquid Digestate	Design Case 10% FW	20% FW	10% FW, wet	
Total	3,787	8,356	12,026	ton/yr
DS	379	836	1,203	ton/yr
H2O	3,408	7,520	10,823	ton/yr
DM content	10.0%	10.0%	10.0%	

Input composting	Design Case 10% FW	20% FW	10% FW, wet	
Total	55,663	50,884	47,424	ton/yr
DS	21,585	19,704	17,674	ton/yr
H2O	34,077	31,180	29,749	ton/yr
DM content	38.8%	38.7%	37.3%	

Output composting	Design Case 10% FW	20% FW	10% FW, wet	
Total	50,441	46,060	43,961	ton/yr
DS	20,970	19,133	17,212	ton/yr
H2O	29,471	26,927	26,749	ton/yr
DM content	41.6%	41.5%	39.2%	

Fine treatment / Screening

	60.0%	60.0%	60.0%

Fine fraction 1.0 inch	Design Case 10% FW	20% FW	10% FW, wet	
Total	30,264	27,636	26,377	ton/yr
DS	12,582	11,480	10,327	ton/yr
H2O	17,683	16,156	16,050	ton/yr

	36.2%	35.3%	35.7%

Medium fraction 1.0 to 1.6 inch	Design Case 10% FW	20% FW	10% FW, wet	
Total	18,275	16,275	15,683	ton/yr
DS	7,597	6,760	6,140	ton/yr
H2O	10,678	9,514	9,543	ton/yr

	3.8%	4.7%	4.3%

Sieve rejects > 1.6 inch	Design Case 10% FW	20% FW	10% FW, wet	
Total	1,901	2,149	1,901	ton/yr
DS	790	893	744	ton/yr
H2O	1,111	1,257	1,157	ton/yr

" The substrate data (quantities, composition , properties) are based on customer information (e.g. substrate data analysis)as well as on values based on experience and assumptions from Hitachi Zosen Inova. The substrate data provided in the mass balance such as substrate properties, material flows and performance data such as plant throughput and biogas yield are given as yearly average values and should be expressly understood as expected values.
The substrate data is subject to seasonal fluctuations (in particular, DS, oDS, oDSan-content, biogasyield, methane content, structure material content and impurities content). This results in fluctuations in the material flows and the performance datalike plant throughput, water balance and biogas yield. Minimum and Maximum values due to seasonal fluctuations are not shown."

Kompogas® by Hitachi Zosen INOVA

Energy balance

(all units are US units)

Project: Sonoma County CA

Client: Sonoma County

Variant: Full stream
Originator: M. Burri
Issue: 6/27/2017
Doc-No.: Y-3321 - EB - 5.0 9/20/2017

(expected values)

(all "ton" are "short ton")
("scf" @ 70°F or 21.111°C, 1013.25 mbar, 0% RH)

AD Plant

	Design Case 10% FW	20% FW	10% FW, wet	
Basic data digester input				
Total input material	68,389	68,179	68,389	ton/yr
Dry substance (DS)	29,445	28,021	26,358	ton/yr
Voltile solids (VS)	18,166	17,810	16,314	ton/yr
Usable volume	3,000	3,000	3,000	m3
	792,516	792,516	792,516	gallons

Biogas				
Total production	220,069,613	220,069,613	220,069,613	scf/yr
Specific on input	3,218	3,228	3,218	scf/ton
Specific on DS	7,474	7,854	8,349	scf/ton DS
Specific on VS	12,114	12,357	13,490	scf/ton VS
Methane content	56.0%	56.0%	56.0%	
Lower heating value (LHV)	502	502	502	Btu/scf
Higher heating value (HHV)	556	556	556	Btu/scf
Energy yield (LHV)	110,573	110,573	110,573	MMBtu/yr
Energy yield (HHV)	122,420	122,420	122,420	MMBtu/yr

CHP

	Design Case 10% FW	20% FW	10% FW, wet	
Cogeneration unit				
Power cogeneration unit(s)	1,550	1,550	1,550	kW
Theor. electrical efficiency	41.9%	41.9%	41.9%	
Theor. thermal efficiency	40.4%	40.4%	40.4%	
Technical availability	97.0%	97.0%	97.0%	
Energy output expected				
Electrical Energy	13,170,660	13,170,660	13,170,660	kWh/yr
Thermal Energy	43,331	43,331	43,331	MMBtu/yr

Kompogas® by Hitachi Zosen INOVA

Energy Input

	Design Case 10% FW	20% FW	10% FW, wet	
AD Plant				
Electrical Energy				
Pretreatment, AD, incl. Waste air treatment	2,985,068	2,975,902	2,985,068	kWh/yr
Total	2,985,068	2,975,902	2,985,068	kWh/yr
Thermal Energy				
Pretreatment, AD, incl. Waste air treatment	16,974	16,922	16,974	MMBtu/yr
Total	16,974	16,922	16,974	MMBtu/yr

Depending on the operation the own consumption can vary ca. +/- 5%

Energy Output

	Design Case 10% FW	20% FW	10% FW, wet	
AD plant				
Electrical Energy				
CHP	13,170,660	13,170,660	13,170,660	kWh/yr
Thermal Energy				
CHP	43,331	43,331	43,331	MMBtu/yr

Energy Balance

	Design Case 10% FW	20% FW	10% FW, wet	
Electrical Energy				
Input	2,985,068	2,975,902	2,985,068	kWh/yr
Output	13,170,660	13,170,660	13,170,660	kWh/yr
Total	10,185,592	10,194,758	10,185,592	kWh/yr
Thermal Energy				
Input	16,974	16,922	16,974	MMBtu/yr
Output	43,331	43,331	43,331	MMBtu/yr
Total	26,357	26,409	26,357	MMBtu/yr

Appendix J

PRELIMINARY

SCOP= O- ,

OTH=RS HZI

R=V	D-T=	D=SCRIPTION	BY	CHK
A	11/10/16	PR=LIMINARY	LAA	MB

Clien-/Projec-/Loca-ion

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

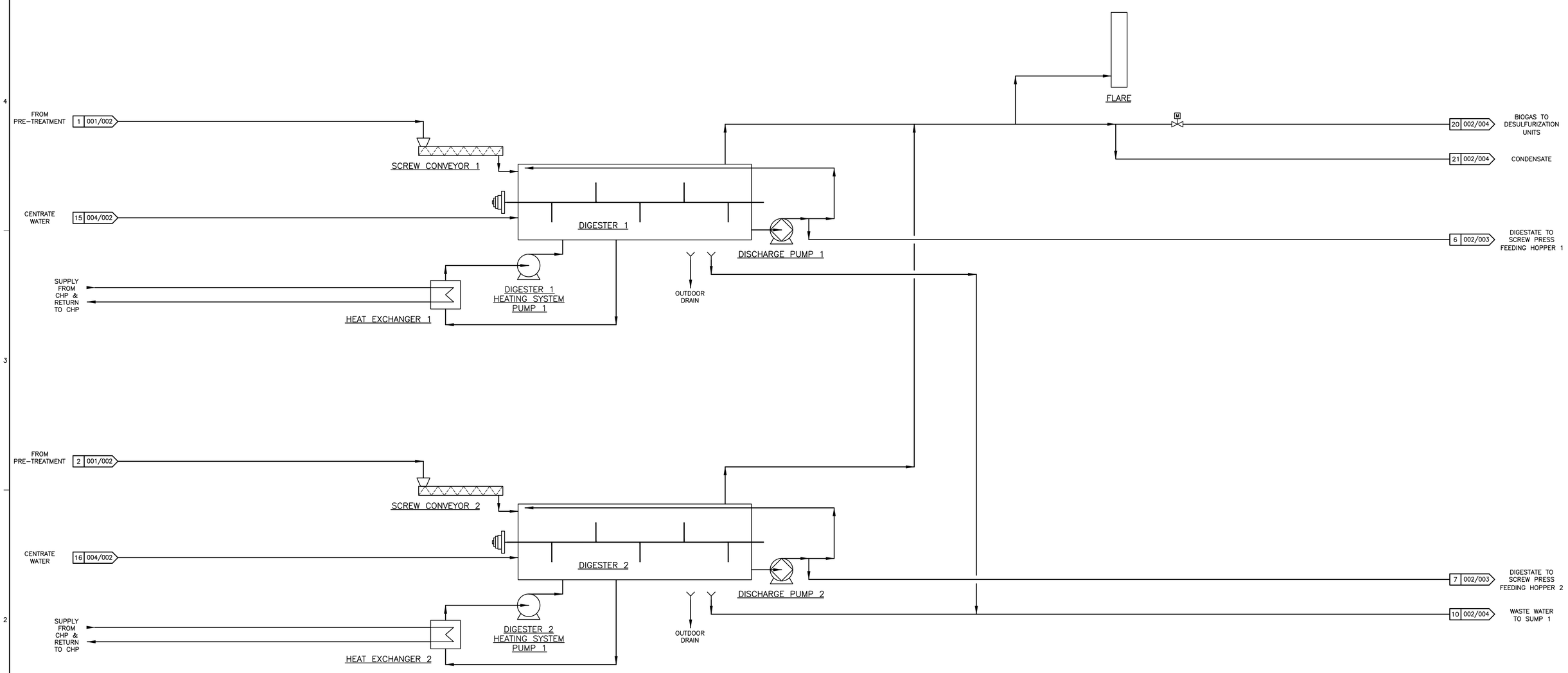
	BY	D-T=
DRAWN	L -	/9/16
CH=CK=D	=H	
APPR'D	MB	

PROCESS FLOW DIAGRAM
PRE-TREATMENT

Hitachi Zosen INOVA

W=IGHT: | SCAL=: N
TOL UNO: - | SH==T 1 O- 1

DR- ING NUMB=R: Y-3321 G 310 001 | R=V: -



PRELIMINARY

SCOPE OF SUPPLY
OTHERS → HZI

REV	DATE	DESCRIPTION	BY	CHK
A	11/10/16	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	11/9/16
CHECKED	FEH	
APPR'D	MB	

PROCESS FLOW DIAGRAM
DIGESTERS 1 & 2

Hitachi Zosen INOVA

WEIGHT: NA | SCALE: NA | TOL UNO: NA | SHEET 1 OF 1

DRAWING NUMBER Y-3321 G 310 002 | REV A

MAINTENANCE CRANE

CITY WATER

14 003/005 PROCESS WATER

12 003/004 PROCESS WATER

2 003/005 WASTE AIR

DIGESTATE FROM DIGESTER 1

6 002/003

SCREW PRESS 1

SCREW PRESS FEEDING HOPPER 1

SCREW PRESS 2

13 003/004 TO LIQUID DIGESTATE COLLECTING TANK

DIGESTATE FROM DIGESTER 2

7 002/003

SCREW PRESS 3

SCREW PRESS FEEDING HOPPER 2

SCREW PRESS 4

SOLID DIGESTATE STORAGE

11 003/005 TO AEROBIZATION BOXES

PRELIMINARY

SCOPE OF SUPPLY

OTHERS → HZI

REV	DATE	DESCRIPTION	BY	CHK
B	1/8/18	RELEASED FOR INFORMATION	LAA	MB
A	11/10/16	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	11/9/16
CHECKED	FEH	
APPR'D	MB	

PROCESS FLOW DIAGRAM
SCREW PRESSES 1–4

Hitachi Zosen INOVA

WEIGHT:	NA	SCALE:	NA
TOL UNO:	NA	SHEET 1	OF 1

DRAWING NUMBER Y-3321 G 310 003 REV B

FROM SCREW PRESSES
13 003/004

PROCESS WATER
12 003/004

5 004/005 WASTE AIR

3 004/005 WASTE AIR

DECANTER 1

CENTRATE TANK

AGITATOR

LIQUID DIGESTATE COLLECTING TANK

TO DIGESTER 1
004/002 15

TO DIGESTER 2
004/002 16

CENTRATE WATER PUMP

LIQUID DIGESTATE PUMP 1

SOLID DIGESTATE STORAGE

12 004/005 TO AEROBIZATION BOXES

LIQUID DIGESTATE PUMP 2

WASTE WATER FROM DIGESTERS
10 002/004

SUMP 1 PUMP

SUMP 1

BIOGAS STORAGE

CHILLER

COOLER

BIOGAS FAN

EXHAUST

CHP 1

ELECTRICAL GRID

BIOGAS FROM DIGESTERS
20 002/004

DESULFURIZATION UNIT 1

DESULFURIZATION UNIT 2

CONDENSATE PUMP

LIQUID DIGESTATE STORAGE TANK

LIQUID DIGESTATE TRANSFER PUMP

LIQUID DIGESTATE

CONDENSATE
21 002/004

LIQUID DIGESTATE SUMP PUMP

SUMP 2

PRELIMINARY

SCOPE OF SUPPLY
OTHERS → HZI

REV	DATE	DESCRIPTION	BY	CHK
B	1/8/18	RELEASED FOR INFORMATION	LAA	MB
A	11/10/16	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	11/9/16
CHECKED	FEH	
APPR'D	MB	

PROCESS FLOW DIAGRAM
STORAGE SYSTEM

Hitachi Zosen INOVA

WEIGHT: NA | SCALE: NA
TOL UNO: NA | SHEET 1 OF 1

DRAWING NUMBER Y-3321 G 310 004 | REV B

WASTE AIR 9 001/005

SOLID DIGESTATE 11 003/005

SOLID DIGESTATE 12 004/005

AEROBIZATION BOX 1 | AEROBIZATION BOX 2 | AEROBIZATION BOX 3 | AEROBIZATION BOX 4 | AEROBIZATION BOX 5 | AEROBIZATION BOX 6 | AEROBIZATION BOX 7 | AEROBIZATION BOX 8 | AEROBIZATION BOX 9 | AEROBIZATION BOX 10 | AEROBIZATION BOX 11 | AEROBIZATION BOX 12

AIR SUPPLY

AEROBIZATION BOX 1 FAN | AEROBIZATION BOX 2 FAN | AEROBIZATION BOX 3 FAN | AEROBIZATION BOX 4 FAN | AEROBIZATION BOX 5 FAN | AEROBIZATION BOX 6 FAN | AEROBIZATION BOX 7 FAN | AEROBIZATION BOX 8 FAN | AEROBIZATION BOX 9 FAN | AEROBIZATION BOX 10 FAN | AEROBIZATION BOX 11 FAN | AEROBIZATION BOX 12 FAN

WASTE AIR 2 003/005

WASTE AIR 3 004/005

WASTE AIR 5 004/005

AIR TO OUTSIDE

EMERGENCY EXHAUST FAN

DOSING FEEDER

CONVEYOR BELT 5

STAR SIEVE 2

STAR SIEVE 3

SMALL FRACTION BUNKER | MEDIUM SIZE BUNKER | OVERSIZE BUNKER

IMPURITIES

STORAGE BUNKER 1

COMPOST

003/005 14 PROCESS WATER

EXHAUST FAN 2

BIOFILTER

COMPRESSOR FAN

AMBIENT AIR

PRELIMINARY

SCOPE OF SUPPLY

OTHERS ← HZI

REV	DATE	DESCRIPTION	BY	CHK
B	1/8/18	RELEASED FOR INFORMATION	LAA	MB
A	11/10/16	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	11/9/16
CHECKED	FEH	
APPR'D	MB	

PROCESS FLOW DIAGRAM
COMPOSTING SYSTEM

Hitachi Zosen INOVA

WEIGHT:	NA
SCALE:	NA
TOL UNO:	NA
SHEET	1 OF 1

DRAWING NUMBER Y-3321 G 310 005 REV B

Appendix K

P&ID DRAWING LIST

DRAWING NUMBER	SHT.	REV.	TITLE
Y-3321 I 312 001	1 of 1	B	Drawing List
Y-3321 I 312 002	1 of 1	A	Legend
Y-3321 I 312 004	1 of 1	A	Pit Bunker Facility Delivery & Processing
Y-3321 I 312 006	1 of 1	A	Pit Bunker Facility Processing
Y-3321 I 312 007	1 of 1	A	Digester Feed Conveying System
Y-3321 I 312 011	1 of 1	A	Digester
Y-3321 I 312 012	1 of 1	A	Heating System
Y-3321 I 312 013	1 of 1	A	Digester Discharge Piping, Organic Waste, Single Pump
Y-3321 I 312 014	1 of 1	A	Hydraulic System, Organic Waste, Single Pump
Y-3321 I 312 015	1 of 1	A	Screw Press
Y-3321 I 312 016	1 of 1	A	Decanter
Y-3321 I 312 017	1 of 1	A	Liquid Digestate Collecting Tank
Y-3321 I 312 018	1 of 1	A	Centrate Tank
Y-3321 I 312 019	1 of 1	A	Ventilation System
Y-3321 I 312 020	1 of 1	B	Aerobization
Y-3321 I 312 022	1 of 1	A	Composting System
Y-3321 I 312 023	1 of 1	A	Biofilter
Y-3321 I 312 024	1 of 1	A	Biogas Flare System
Y-3321 I 312 025	1 of 1	A	Desulfurization System
Y-3321 I 312 026	1 of 1	A	Biogas Storage
Y-3321 I 312 027	1 of 1	A	Biogas Cooler/Condenser
Y-3321 I 312 028	1 of 1	A	Gas Engine
Y-3321 I 312 029	1 of 1	A	Hot Water Distribution
Y-3321 I 312 030	1 of 1	A	Sump System
Y-3321 I 312 031	1 of 1	B	Water Utility
Y-3321 I 312 032	1 of 1	A	Air Utility

DRAWING NUMBER	SHT.	REV.	TITLE
Y-3321 I 312 035	1 of 1	A	Digester 2
Y-3321 I 312 036	1 of 1	A	Heating System/Digester 2
Y-3321 I 312 037	1 of 1	A	Digester 2 Discharge Piping, Organic Waste, Single Pump
Y-3321 I 312 038	1 of 1	A	Hydraulic System, Organic Waste, Single Pump
Y-3321 I 312 039	1 of 1	A	Screw Press/Digester 2
Y-3321 I 312 040	1 of 1	A	Liquid Digestate Collecting Tank/Digester 2
Y-3321 I 312 041	1 of 1	A	Centrate Tank/Digester 2
Y-3321 I 312 070	1 of 1	A	Decanter 2

B	9/22/17	R=VIS=D AS NOT=D	LAA	MB
-	6/30/17	PR=LIMINARY	LAA	MB
R=V	D-T=	D=SCRIPTION	BY	CHK

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Clien-/Projec-/Loca-ion

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	D-T=
DRAWN	L -	/28/17
CH=CK=D	=H	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
DRAWING LIST

W=IGHT: | SCAL=: N

TOL UNO: - | SH=ET 1 O- 1

Hitachi Zosen INOVA

DR- ING NUMB=R: Y-3321 I 312 001

R=V

FUNCTION SYMBOL SCHEDULE

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	CONDUCTIVITY (ELECTRICAL)			CONTROL	
D	DENSITY OR SPECIFIC GRAVITY	DIFFERENTIAL		DAMPER	
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			FORWARD
G	GAGING		GLASS, VIEWING DEVICE		
H	HAND				HIGH, OPEN
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW, CLOSED
M	MOTOR	MOMENTARY			MIDDLE, INTERMEDIATE
N	VACUUM	IGNITER	USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	OPERATION	OFFSET	ORIFICE, RESTRICTION		
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD, PRINT		REVERSE
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, LOUVER	
W	WEIGHT, FORCE, TORQUE		WELL		
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	RECEIVE	UNCLASSIFIED
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

SYMBOL MOUNTING SYSTEM

	FIELD MOUNTED	FACE MOUNTED ON SYSTEM CONTROL PANEL #, MAIN CONTROL PANEL IF # IS OMITTED	BEHIND SYSTEM CONTROL PANEL	FACE MOUNTED ON UNIT CONTROL PANEL # OR WALL MOUNTED – W	BEHIND UNIT CONTROL PANEL # OR WALL MOUNTED PANEL
DISCRETE INSTRUMENTS	○	⊖	⊖	⊖	⊖
COMPUTER FUNCTION	⬡	⬡	⬡	⬡	⬡
PROGRAMMABLE LOGIC CONTROLLER, OR DIGITAL LOGIC CONTROLS INTEGRAL TO THE DISTRIBUTED CONTROL SYSTEM	▢	▢	▢	▢	▢
SHARED DISPLAY	▢	▢	▢	▢	▢

PFD AND P&ID UTILITY LINE DESIGNATIONS

CODE SYMBOL	UTILITY DESCRIPTION
AC	AIR, COMBUSITION
AF	AIR, FLUIDIZING
AIS	AIR, INSTRUMENT SUPPLY
AP	AIR, PLANT COMPRESSED
BGF	BIOGAS, FUEL
BGP	BIOGAS, PILOT
C	CONDENSATE
D	DRAIN
NGF	NATURAL GAS, FUEL
NGP	NATURAL GAS, PILOT
PA	PRIMARY AIR
SA	SECONDARY AIR
SBC	SODIUM BICARBONATE
SH	SODIUM HYDROXIDE (CAUSTIC)
V	VENT
WC	WATER, CITY
WCN	WATER, CENTRATE
WCR	WATER, COOLING RETURN
WCS	WATER, COOLING SUPPLY
WD	WATER, DIGESTATE
WDR	WATER, DRAIN
WFP	WATER, FIRE PROTECTION
WHR	WATER, HEATING RETURN
WHS	WATER, HEATING SUPPLY
WP	WATER, PROCESS
WS	WATER, SERVICE
WSL	WASTE, LIQUID
WW	WATER, WELL

LINE CODES

- FLUE GAS PATH/DUCTWORK
- PRIMARY PROCESS
- SECONDARY PROCESS
- TERTIARY PROCESS
- ELECTRICAL SIGNAL
- PNEUMATIC SIGNAL
- COMPRESSED AIR
- CAPILLARY TUBE
- SONIC, R.F. OR OPTICAL SIGNAL (GUIDED)
- SONIC, R.F. OR OPTICAL SIGNAL (UNGUIDED)
- HYDRAULIC SIGNAL
- MECHANICAL LINK
- SOFTWARE OR DATA LINK
- VENDOR BOUNDARY
- REFERENCE CONTINUATION LINE

CONTROLLER NOTATION

PV = PROCESS VARIABLE INPUT
SP = SET POINT INPUT
C = CONTROL INPUT

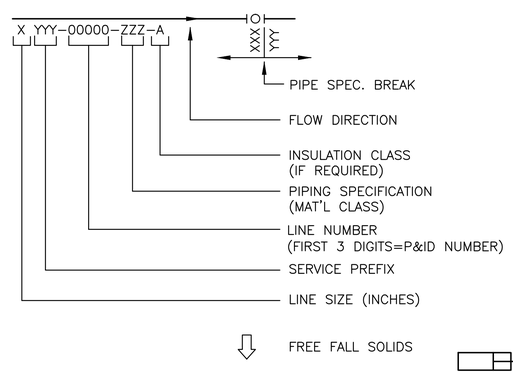
SWITCH NOTATION

A/M = AUTO/MANUAL
ESTOP = EMERGENCY STOP
HOA = HAND–OFF–AUTO
ST = START
SP = STOP
RDY = READY
O/C = OPEN/CLOSE
O/O = ON/OFF
SEL = SELECTOR
S/S = START/STOP
ZSO = POSITION SWITCH OPEN
ZSC = POSITION SWITCH CLOSED
F/RJ = FORWARD/REVERSE JOG

VALVE OPERATION NOTATION

FC = FAIL CLOSE
FO = FAIL OPEN
FS = FAIL STATIC (LAST POSITION)
LO = LOCK OPEN
LC = LOCK CLOSED

PIPING LINE DESIGNATIONS



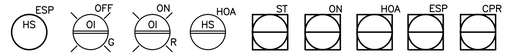
PIPING SYMBOLS

- GATE OR GENERIC VALVE
- CLOSED IN NORMAL OPERATION
- LIMIT ORIFICE
- BUTTERFLY VALVE
- CLOSED FULL BORE BALL VALVE
- OPEN FULL BORE BALL VALVE
- CLOSED GLOBE VALVE
- OPEN GLOBE VALVE
- PINCH VALVE
- DIAPHRAGM VALVE
- CLOSED PLUG VALVE
- OPEN PLUG VALVE
- CHECK VALVE (FLOW →)
- CHECK STOP VALVE (FLOW →)
- BALL CHECK VALVE
- AUTOMATIC RECIRCULATION VALVE
- LIMITING ORIFICE VALVE
- CONTROL VALVE
- PRESSURE REGULATING VALVE
- CONTROL VALVE WITH POSITIONER
- S = SOLENOID OPERATED; M = MOTOR OPERATED; T = HAND OPERATED; ⟋ = MANUAL RESET
- NEEDLE VALVE
- PRESSURE RELIEF OR SAFETY
- 3 – WAY VALVE
- 4 – WAY VALVE
- PRESSURE & VACUUM RELIEF VALVE
- DESUPERHEATER
- EDUCTOR
- REDUCER OR DUCT TRANSITION
- STRAINER
- F — FILTER
- TST — TEMPORARY STRAINER
- T — STEAM TRAP W/ BLOCK, BYPASS & DRAIN VALVES
- S–TRAP W/DRAIN
- NOZZLE W/BLIND FLANGE
- WELDED CAP
- SCREWED CAP
- SCREWED PLUG
- PROCESS DRAIN/TO TRENCH
- SEWER
- QUICK DISCONNECT CONNECTION
- FLEX HOSE
- ET — PIPE INSULATION W/ HEAT TRACING
- DUCTWORK INSULATION
- OILER, SLOPE PIPING DOWN TO EQUIPMENT FROM OILER
- IA — INSTRUMENT AIR FILTER–REGULATOR WITH GAUGE CONNECTS TO AP SYSTEM UNLESS NOTED OTHERWISE
- N_2 — NITROGEN REGULATOR WITH GAUGE
- SP XXX–YY — SPECIALTY ITEM NUMBER
- SLIDE GATE W/ PNEUMATIC CYLINDER
- SLIDE GATE W/ MANUAL OPERATOR
- CONDENSATE POT W/FILL PLUG

EQUIPMENT SYMBOLS

- DAMPER; M = MOTOR OPERATED; T = HAND OPERATED
- EXPANSION JOINT
- RUPTURE DISK
- M — MOTOR
- M — VIBRATING CONVEYOR MOTOR
- BACKFLOW PREVENTOR (FLOW →)
- DOUBLE DUMP VALVE
- SINGLE DUMP VALVE
- ROTARY VALVE
- SILENCER
- AGITATOR
- CENTRIFUGAL PUMP
- OR — POSITIVE DISPLACEMENT PUMP
- ROTARY PUMP / BLOWER
- ROTARY COMPRESSOR
- PROGRESSING CAVITY PUMP
- DIAPHRAGM PUMP
- CENTRIFUGAL BLOWER OR FAN
- HEAT EXCHANGER
- LUMPBREAKER/CRUSHER
- HEAT TRACING
- DRYER
- BELT, CHAIN OR ROLLER CONVEYOR
- DRAG CONVEYOR
- SCREW CONVEYOR
- VIBRATING CONVEYOR
- HEAT EXCHANGER FINNED TUBE
- INLINE MIXER
- HYDRAULIC MOTOR
- WEATHER HOOD
- FILTER/SILENCER
- VESSEL/EQUIPMENT INSULATION
- PERSONNEL PROTECTION
- CALIBRATION COLUMN
- PI — ANNULAR PRESSURE GAUGE
- VENTURI
- PULSATION DAMPENER
- EXHAUST FAN
- CHAIN OPERATED
- TELEVISION CAMERA
- TROUGH

MOTOR CONTROL SYMBOLS



TERMINATION TAGS

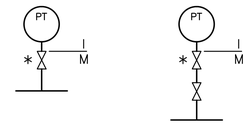
- PROCESS LINE CONTINUATION "BY OTHERS"
- X YYY.Y/ZZZ.Z — PROCESS LINE CONTINUATION
  LEGEND: X = LINE NUMBER; Y = DWG. NO. FROM; Z = DWG. NO. TO
- SIGNAL CONTINUATION "BY OTHERS"
- X YYY.Y/ZZZ.Z — SIGNAL CONTINUATION
  LEGEND: X = LINE LETTER; Y = DWG. NO. FROM; Z = DWG. NO. TO
- OTHERS / HZIU — SCOPE OF WORK MARKER
- TP HZ–XXX — TIE–IN POINT
- EJ XXX–YY — EXPANSION JOINT NUMBER
- ASME CODE LIMIT

FUNCTION DESIGNATIONS

- P — PURGE CONNECTION
- S — SAMPLE POINT
- I — INTERLOCK
- X — MULTIPLY
- ÷ — DIVIDE
- > — HIGH SELECT
- < — LOW SELECT
- √ — SQUARE ROOT
- Σ — SUM (ALGEBRAIC)
- Δ — DIFFERENCE (ALGEBRAIC)
- f — SPECIAL FUNCTION
- I/P — CURRENT TO PNEUMATIC CONVERTER
- LOW LIMITER
- HIGH LIMITER
- R+B — RATIO PLUS BIAS
- +/– — BIAS

INSTRUMENT SYMBOLS

- VARIABLE FREQUENCY DRIVE
- VARIABLE AREA FLOW METER
- ORIFICE
- DIAPHRAGM ISOLATOR
- AVERAGING FLOW ELEMENT
- VORTEX FLOW ELEMENT
- TI — LOCAL THERMOMETER IN THERMOWELL
- I X / S X — HARDWIRED INTERLOCK OR SEQUENCE
- I X / S X — PLANT CONTROLLER OR DCS INTERLOCK OR SEQUENCE
- BMCP — BURNER MASTER CONTROL PANEL
- MAGNETIC FLOW METER
- L — LIGHT
- FIELD MOUNTED
- 120V FIELD MOUNTED PANEL
- T/R CONTROL PANEL
- DCS
- AVC — AUTOMATIC VOLTAGE CONTROL
- POSITIVE DISPLACEMENT METER



* IF SOCKET WELD VALVES, ADDITIONAL FITTINGS WILL BE REQUIRED

ABBREVIATIONS

de – DE–ENERGIZED POSITION
ES – ELECTRIC SUPPLY
ET – ELECTRICAL TRACING
ST – STEAM TRACING
V – INCLUDED WITH VENDOR SUPPLIED PACKAGE
LCS – LOCAL CONTROL STATION
VTR – VENT THROUGH ROOF

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location
SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

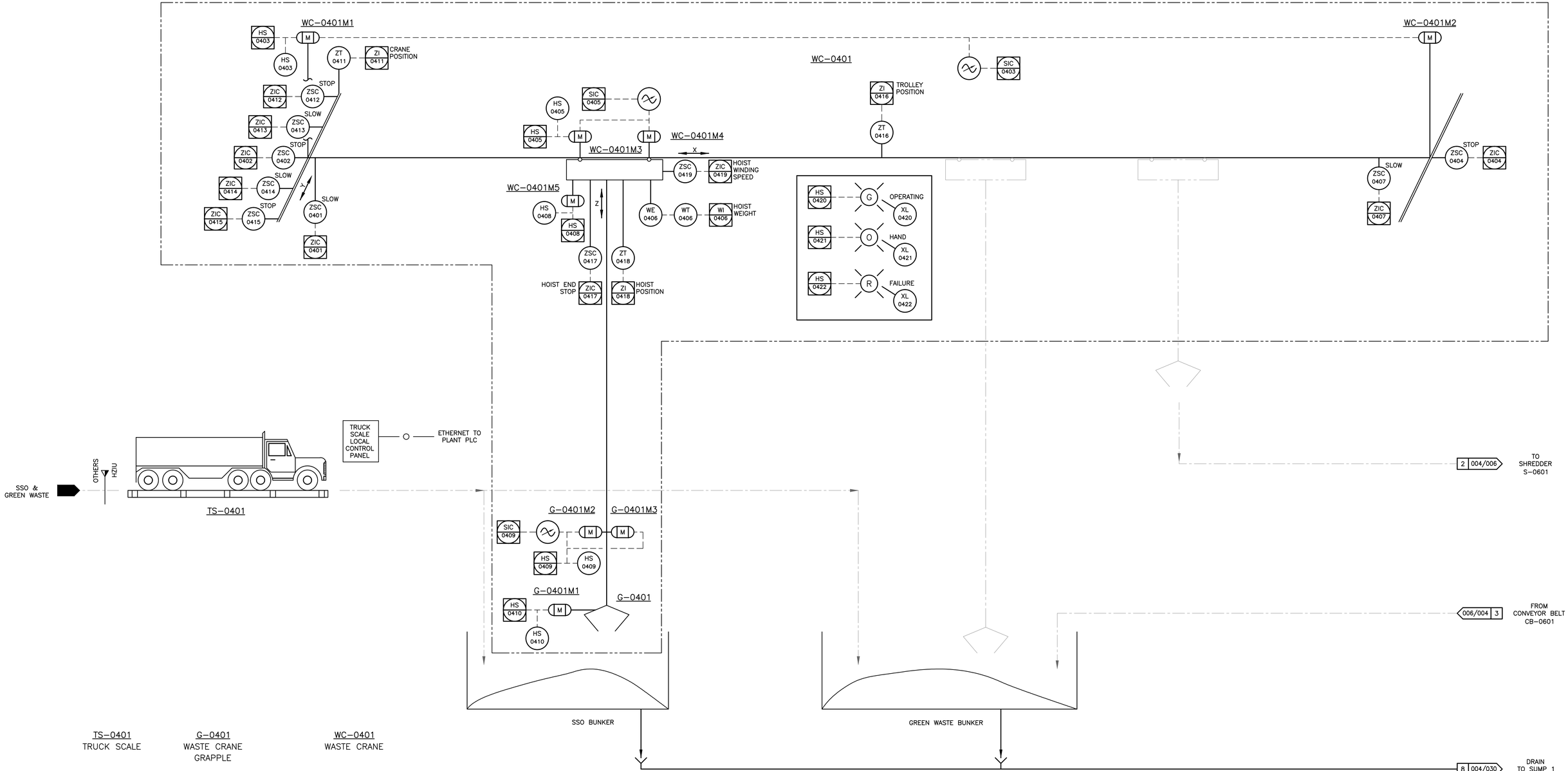
	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
LEGEND

Hitachi Zosen INOVA

WEIGHT:	NA	SCALE:	NA
TOL UNO:	NA	SHEET	1 OF 1

DRAWING NUMBER: Y–3321 I 312 002
REV: A



TS-0401
TRUCK SCALE

G-0401
WASTE CRANE
GRAPPLE

G-0401M1
WASTE CRANE
GRAPPLE MOTOR 1 (GRAB)

G-0401M2
WASTE CRANE
GRAPPLE MOTOR 2 (LIFTING)

G-0401M3
WASTE CRANE
GRAPPLE MOTOR 3 (CABLE DRUM)

WC-0401
WASTE CRANE

WC-0401M1
WASTE CRANE
MOTOR 1

WC-0401M2
WASTE CRANE
MOTOR 2

WC-0401M3
WASTE CRANE
MOTOR 3

WC-0401M4
WASTE CRANE
MOTOR 4

WC-0401M5
WASTE CRANE
MOTOR 5

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

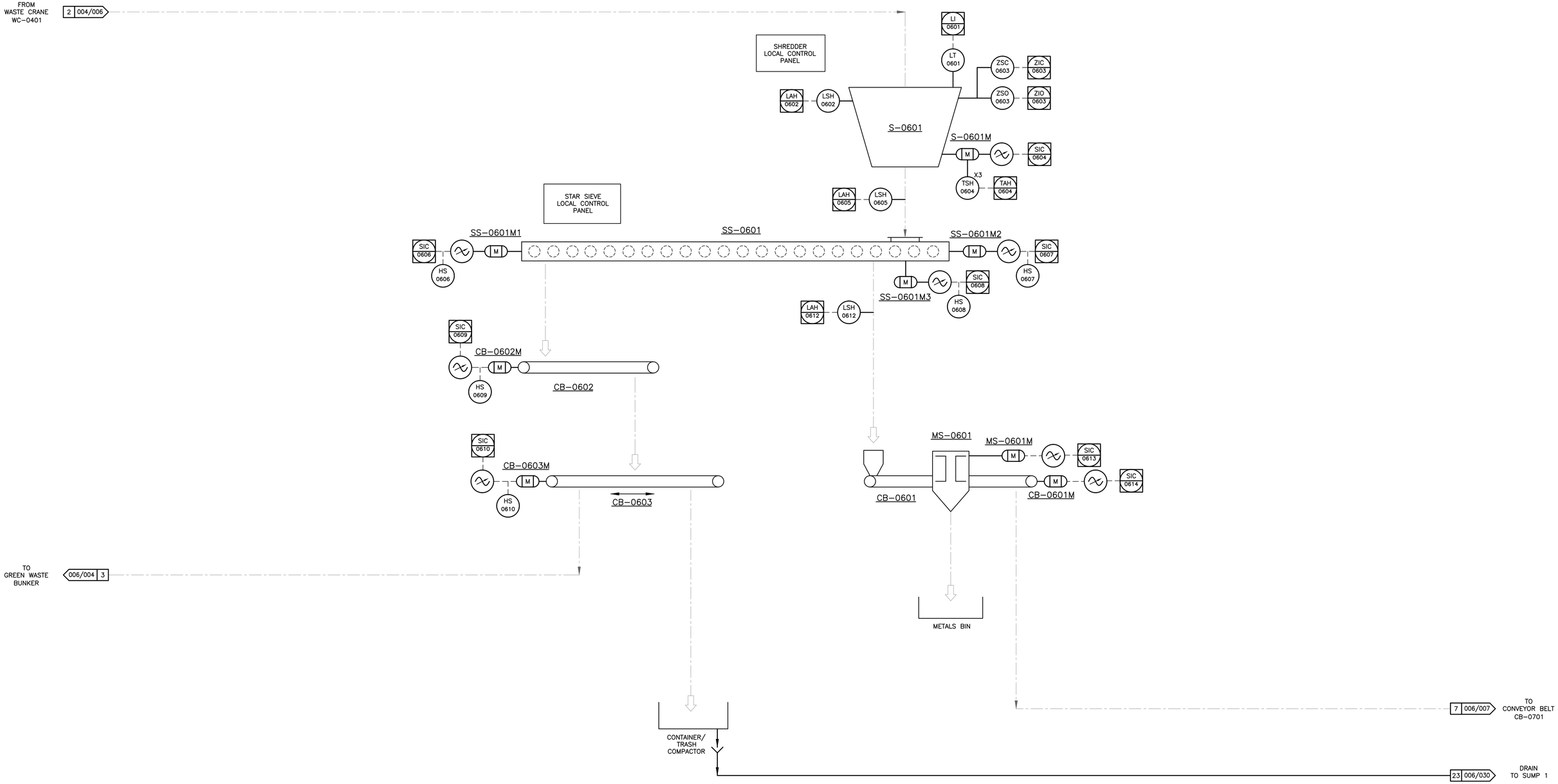
	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
PIT BUNKER FACILITY
DELIVERY & PROCESSING

Hitachi Zosen INOVA

WEIGHT:	NA	SCALE:	NA
TOL UNO:	NA	SHEET	1 OF 1

DRAWING NUMBER: Y-3321 I 312 004
REV: A



S-0601 SHREDDER	SS-0601 STAR SIEVE	CB-0601 CONVEYOR BELT 1
S-0601M SHREDDER MOTOR	SS-0601M1 STAR SIEVE MOTOR 1	CB-0601M CONVEYOR BELT 1 MOTOR
	SS-0601M2 STAR SIEVE MOTOR 2	
	SS-0601M3 STAR SIEVE MOTOR 3	

CB-0602 CONVEYOR BELT 2	CB-0603 CONVEYOR BELT 3 REVERSIBLE	MS-0601 MAGNETIC SEPARATOR
CB-0602M CONVEYOR BELT 2 MOTOR	CB-0603M CONVEYOR BELT 3 MOTOR	MS-0601M MAGNETIC SEPARATOR MOTOR

REV	DATE	DESCRIPTION	BY	CHK
B	8/4/17	RELEASED FOR INFORMATION	LAA	MB
A	6/30/17	PRELIMINARY	LAA	MB

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SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
PIT BUNKER FACILITY
PROCESSING

WEIGHT:	NA	SCALE:	NA
TOL UNO:	NA	SHEET 1	OF 1

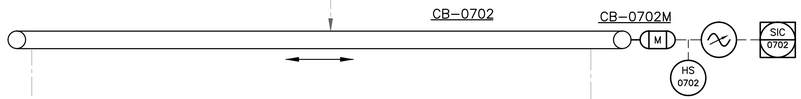
Hitachi Zosen INOVA

DRAWING NUMBER Y-3321 I 312 006

REV B

ORGANIC WASTE

7 | 006/007



1 | 007/011 TO DIGESTER 1

2 | 007/035 TO DIGESTER 2

CB–0701	CONVEYOR BELT 1
CB–0701M	CONVEYOR BELT 1 MOTOR
CB–0702	CONVEYOR BELT 2 REVERSIBLE
CB–0702M	CONVEYOR BELT 2 MOTOR

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
DIGESTER FEED
CONVEYING SYSTEM

Hitachi Zosen INOVA

WEIGHT:	NA	SCALE:	NA
TOL UNO:	NA	SHEET 1	OF 1

DRAWING NUMBER Y–3321 I 312 007

REV A

AIR VENT FROM FOG SYSTEM

11 | 010/011 | ø8" V

5 | 011/035 | WASTE AIR

SC-1101
FEEDING SCREW
CONVEYOR

SC-1101M
FEEDING SCREW
CONVEYOR MOTOR

EJ-1101

ORGANIC WASTE FROM CB-0701

1 | 007/011

SEE NOTE 1

SC-1101M

LE 1101 | LSH 1101 | LAH 1101

SIC 1102 | M | SAL 1102 | SSL 1102

SC-1101

SEE NOTE 5

3" V-1109 LC

3" BGF-01105-612

PSV 1115

SEE NOTE 5

V-1113 6"

SEE NOTE 5

SP 011-01 FLAME ARRESTOR

SEE NOTE 5

6" X 4"

FT 1114 | FI 1114

SEE NOTE 5

6" X 4"

V-1114 6"

SEE NOTE 5

6" BGF-01106-612

6 | 011/035 | BIOGAS

3/4" V-1112

SEE NOTE 5

3/4" V-1111 | PT 1113 | PI 1113

3/4" V-1110 | PI 1112

6" BGF-01104-612

HS 1105 | L | SG 1105 | SG 1106

TI 1107 | TT 1107 | TE 1107

SAMPLE PORT

LI 1108 | TI 1109 | TT 1109 | LT 1108 | TE 1109

SAMPLE PORT

RUPTURE DISC

LI 1110 | LT 1110

SAMPLE PORT

TI 1111 | TT 1111 | TE 1111

N1

V-1104

10" BIOM-01302-416
SEE NOTE 3

011/013 | 8

INOCULATION RETURN

FROM CENTRATE TANK

7 | 018/011

2 1/2" WC-01803-416

FI 1103 | FIT 1103 | FE 1103

IA

HS 1104 | ZSC 1104 | ZIC 1104 | ZSO 1104 | ZIO 1104 | HV 1104

V-1101

8"

SPARE

ZS 1128 | ZA 1128 SEALING UNIT

DM-1101

DM-1101M

M

V-1102

SSL 1127 | SAL 1127

SIC 1129

PI 1126

MANWAY

V-1103

FAL 1125 | FSL 1125

SAL 1116 | ZA 1117 SEALING UNIT

SSL 1116 | ZS 1117

3/4" V-1108

PI 1118 | PI 1119

FAL 1120

FSL 1120

1/2" LO-01103-416

PI 1121

DLS-1102

HS 1122

N2

V-1105

6"

V-1106

MANWAY

16" BIOM-01102-416

9 | 011/013 | TO HYDRAULIC DIGESTATE PUMP

LIQUID WASTE

1 | 010/011 | 1/2" WSL-01012-513

D-1101
SEE NOTE 4 & NOTE 7

LOCAL CONTROL PANEL NEAR SCREW

HS 1130 EMERGENCY SWITCH

HS 1131 MAINTENANCE SWITCH

HS 1123 | DLS-1101

PI 1124

1/2" LO-01101-416

SEE NOTE 6

MH4 | ASH 1132 | AAH 1132 | 25% LEL

MH4 | ASH 1133 | AA 1133 | HORN

MH4 | ASH 1134 | AAH 1134 | 25% LEL

MH4 | ASH 1135 | AA 1135 | HORN

SLOPE 2%

SLOPE 2%

SLOPE 2%

22 | 011/035 | DRAIN TO DIGESTER 2

DRAIN WATER

20 | 003/011

SLOPE 2%

DRAIN WATER

21 | 005/011

DLS-1101
DIGESTER
LUBE SYSTEM 1

DLS-1102
DIGESTER
LUBE SYSTEM 2

DM-1101
DIGESTER
MIXER

DM-1101M
DIGESTER
MIXER MOTOR

D-1101
DIGESTER

NOTES:

1. LOWER PART OF HOPPER WITH LEVEL INDICATORS SUPPLIED BY HZI, TOP COVER AND CONNECTION TO BELT CONVEYOR SUPPLIED BY HZIU.
2. FLANGE DISCHARGE GATE VALVE SUPPLIED BY HZI, DISCHARGE PIPE TO DEWATERING UNIT SUPPLIED BY HZIU.
3. INSULATION OF INOCULATION PIPE BY HZIU.
4. INSULATION OF DIGESTER BY HZIU. LIGHTNING PROTECTION SUPPLIED BY HZIU. ASCENT PLATFORM SUPPLIED BY HZIU. LIGHTING BELOW FASSADE AND PLATFORM SUPPLIED BY HZIU.
5. INSTRUMENTATION AND EQUIPMENT BY HZI, PIPING BY HZIU.
6. SUPPLIED BY HZI.
7. FOR HEATING SYSTEM; SEE DRAWING Y-XXXX I 312 012.

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

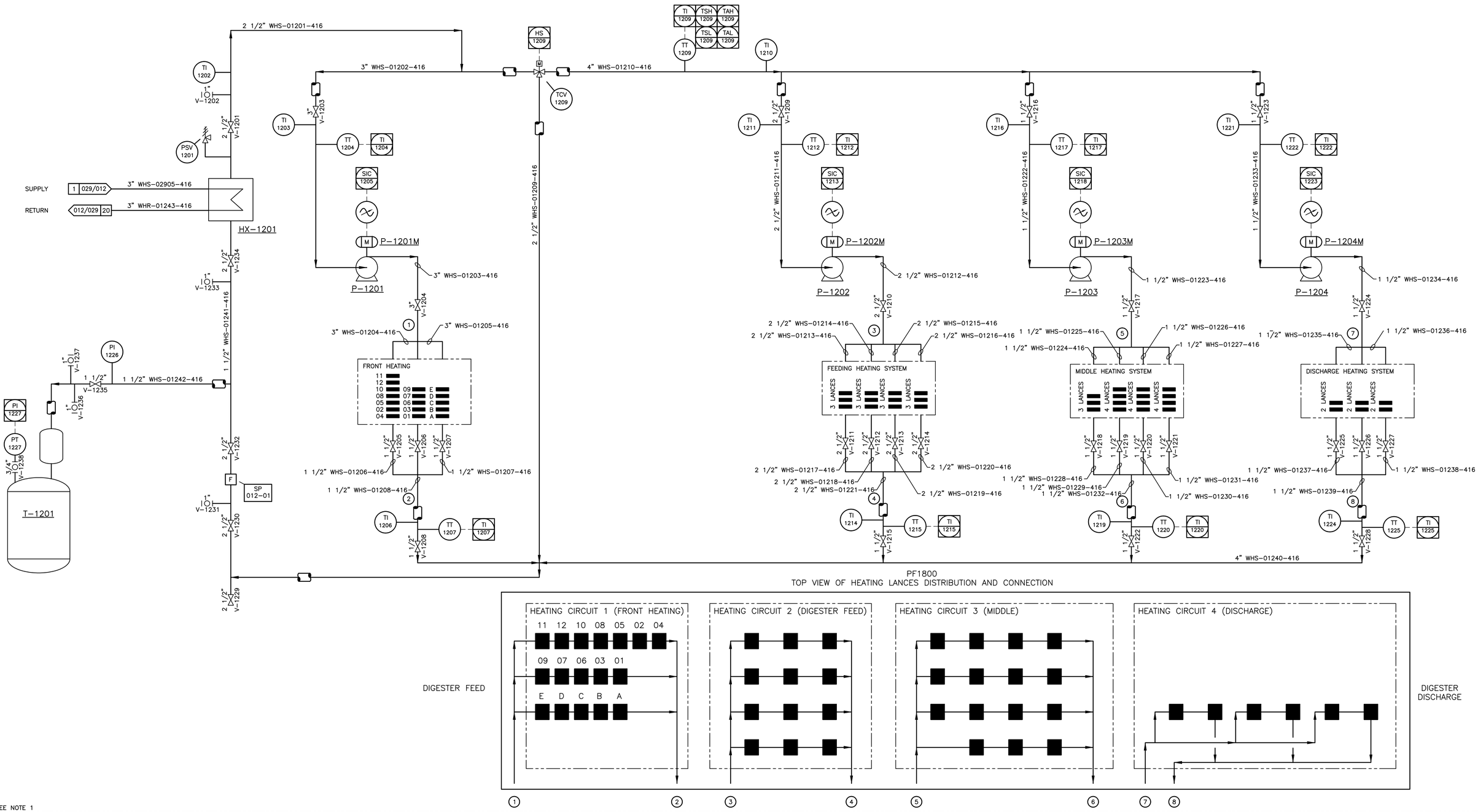
P & I DIAGRAM
DIGESTER

Hitachi Zosen INOVA

WEIGHT: NA | SCALE: NA

TOL UNO: NA | SHEET 1 OF 1

DRAWING NUMBER Y-3321 I 312 011 | REV A



T-1201
DIGESTER HEATING
SYSTEM EXPANSION TANK

HX-1201
DIGESTER HEATING
SYSTEM HEAT EXCHANGER

P-1201
DIGESTER HEATING
SYSTEM RECIRC PUMP 1

P-1201M
DIGESTER HEATING
SYSTEM RECIRC PUMP 1 MOTOR

P-1202
DIGESTER HEATING
SYSTEM RECIRC PUMP 2

P-1202M
DIGESTER HEATING
SYSTEM RECIRC PUMP 2 MOTOR

P-1203
DIGESTER HEATING
SYSTEM RECIRC PUMP 3

P-1203M
DIGESTER HEATING
SYSTEM RECIRC PUMP 3 MOTOR

P-1204
DIGESTER HEATING
SYSTEM RECIRC PUMP 4

P-1204M
DIGESTER HEATING
SYSTEM RECIRC PUMP 4 MOTOR

NOTES:
1. SUPPLIED BY HZI.

REV	DATE	DESCRIPTION	BY	CHK
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Client/Project/Location
SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

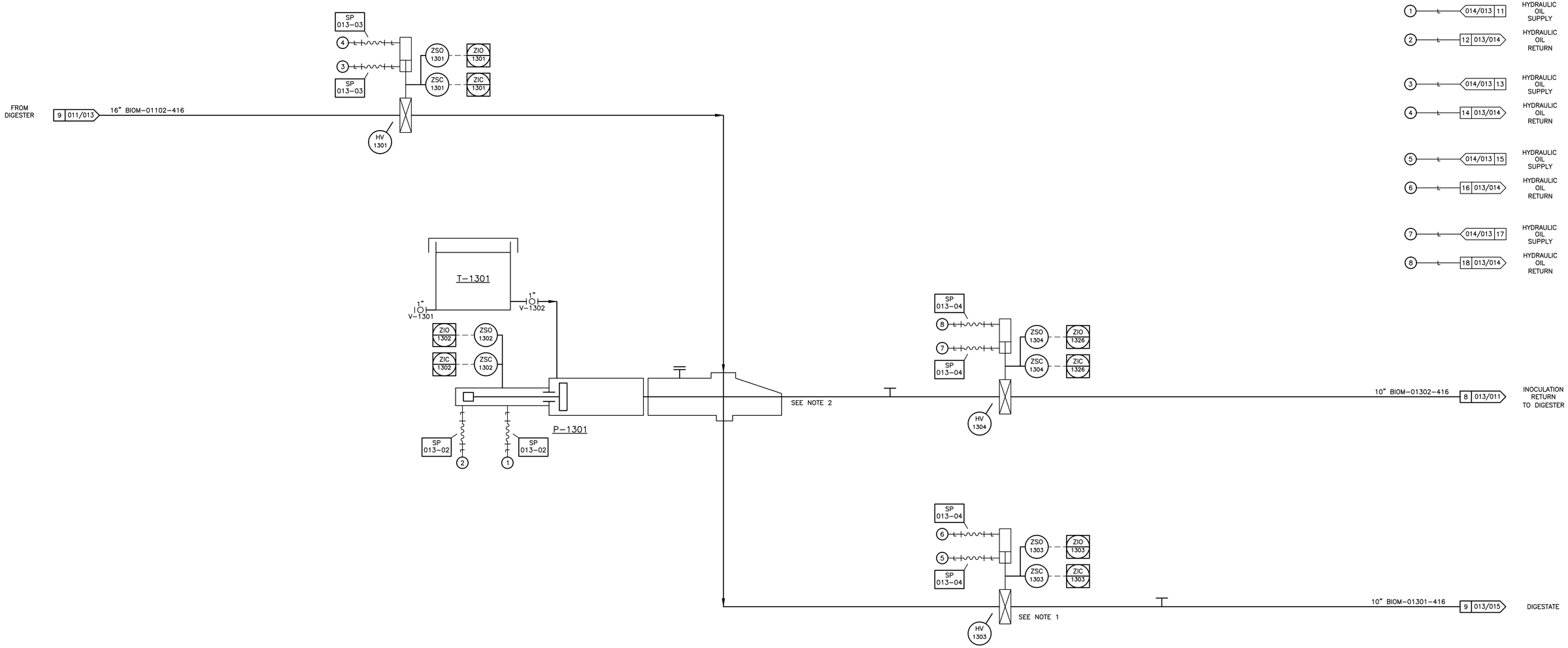
	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
HEATING SYSTEM

Hitachi Zosen INOVA

WEIGHT: NA | SCALE: NA
TOL UNO: NA | SHEET 1 OF 1

DRAWING NUMBER Y-3321 I 312 012 | REV A



T-1301
DIGESTER DISCHARGE PUMP RESERVOIR

P-1301
DIGESTER DISCHARGE PUMP

NOTES:
1. FLANGE DISCHARGE GATE VALVE SUPPLIED BY HZI, DISCHARGE PIPE TO DEWATERING UNIT SUPPLIED BY HZIU.
2. INSULATION OF INOCULATION PIPE BY HZIU.

REV	DATE	DESCRIPTION	BY	CHK
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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

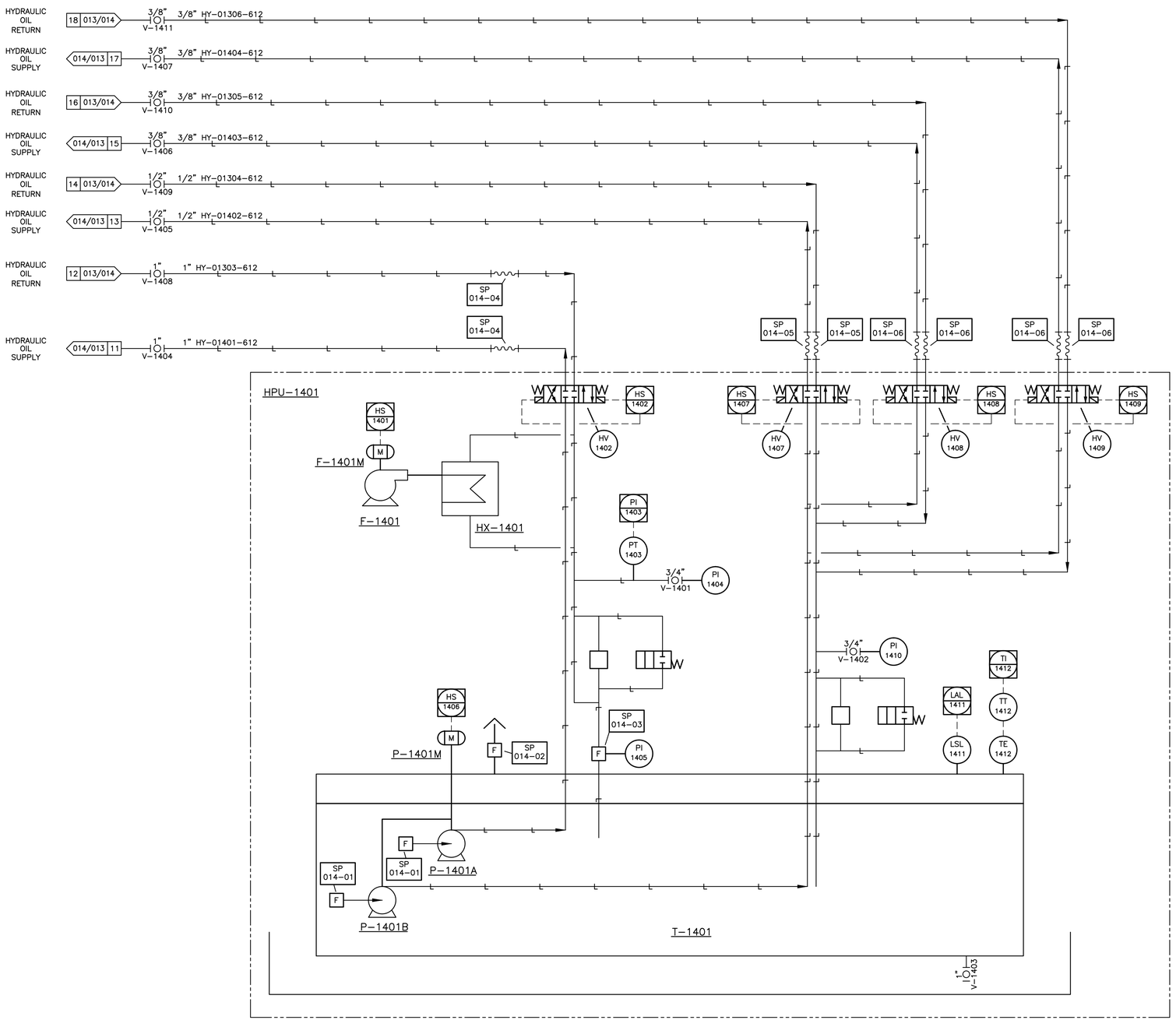
P & I DIAGRAM
DIGESTER DISCHARGE PIPING
ORGANIC WASTE SINGLE PUMP

Hitachi Zosen INOVA

WEIGHT:	NA	SCALE:	NA
TOL UNO:	NA	SHEET	1 OF 1

DRAWING NUMBER
Y-3321 I 312 013

REV
A



HPU-1401
DIGESTER HYDRAULIC POWER UNIT

F-1401
HPU-1401 COOLING FAN

F-1401M
HPU-1401 COOLING FAN MOTOR

HX-1401
DIGESTER HYDRAULIC HEAT EXCHANGER

P-1401A
DIGESTER HYDRAULIC PUMP 1

P-1401B
DIGESTER HYDRAULIC PUMP 2

P-1401M
HYDRAULIC PUMPS MOTOR

T-1401
DIGESTER HYDRAULIC TANK

NOTES:
1. SUPPLIED BY HZI.
2. FLANGE DISCHARGE GATE VALVE SUPPLIED BY HZI, DISCHARGE PIPE TO DEWATERING UNIT SUPPLIED BY HZIU.
3. INSULATION OF INOCULATION PIPE BY HZIU.

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
HYDRAULIC SYSTEM
ORGANIC WASTE SINGLE PUMP

Hitachi Zosen INOVA

WEIGHT:	NA	SCALE:	NA
TOL UNO:	NA	SHEET	1 OF 1

DRAWING NUMBER: Y-3321 I 312 014
REV: A

SPFH–1501
SCREW PRESS
FEEDING HOPPER

MC–1501
MAINTENANCE CRANE

MC–1501M
MAINTENANCE CRANE
MOTOR

ø20" AW

10 | 015/019

WASTE AIR

HD 1541

HD 1539

ø8" AW

HD 1540

ø10" AW

HS 1504

M

MC–1501M

MC–1501

HPU–1501

1/2" HY–01504–612

1/2" HY–01503–612

HV 1521

HS 1521

PAH 1522

PSH 1522

PI 1523

PI 1524

LAH 1527

TAH 1528

HS 1525

TI 1526

LSH 1527

TSH 1528

M

P–1501M

P–1501

T–1501

ø8" AW

EJ–1502

HPU–1502

1/2" HY–01506–612

1/2" HY–01505–612

HV 1529

HS 1529

PAH 1530

PSH 1530

PI 1531

PI 1532

LAH 1535

TAH 1536

HS 1533

TI 1534

LSH 1535

TSH 1536

M

P–1502M

P–1502

T–1502

ø8" AW

EJ–1503

HS 1501

ZIC 1501

ZIO 1501

ZSC 1501

ZSO 1501

LAH 1502

LSH 1502

EJ–1501

IA

HV 1501

SP 015–01

10" BIOM–01301–416

DIGESTATE

19 | 013/015

SPFH–1501

LSH 1503

LAH 1503

HS 1537

HV 1537

1" V–1501

PROCESS WATER

3 | 031/015

1" WP–03113–416

LI 1505

LIT 1505

HS 1506

SLS–1501

PI 1507

FSL 1508

FAL 1508

PI 1509

SIC 1510

M

SP–1501M1

SP–1501

LSH 1512

LAH 1512

HS 1511

HS 1538

HV 1538

1" V–1502

1" WP–01507–612

SLS–1502

PI 1515

FSL 1516

FAL 1516

HS 1514

SIC 1518

M

SP–1502M1

PI 1517

LIT 1513

LI 1513

HS 1519

SP–1502

LSH 1520

LAH 1520

4" WD–01502–416

4" WD–01501–416

10 | 015/017

LIQUID DIGESTATE

13 | 015/017

DRAIN WATER

SOLID DIGESTATE FROM DECANTER

20 | 016/015

SOLID DIGESTATE STORAGE

6 | 015/020

SOLID DIGESTATE

7 | 015/020

SOLID DIGESTATE

SLS–1501
SCREW PRESS 1
LUBE SYSTEM

SP–1501
SCREW PRESS 1

SP–1501M1
SCREW PRESS 1
MOTOR 1

T–1501
SCREW PRESS 1
HYDRAULIC TANK

P–1501
SCREW PRESS 1
HYDRAULIC PUMP

P–1501M
SCREW PRESS 1
HYDRAULIC PUMP MOTOR

HPU–1501
SCREW PRESS 1
HYDRAULIC POWER UNIT

SLS–1502
SCREW PRESS 2
LUBE SYSTEM

SP–1502
SCREW PRESS 2

SP–1502M1
SCREW PRESS 2
MOTOR 1

T–1502
SCREW PRESS 2
HYDRAULIC TANK

P–1502
SCREW PRESS 2
HYDRAULIC PUMP

P–1502M
SCREW PRESS 2
HYDRAULIC PUMP MOTOR

HPU–1502
SCREW PRESS 2
HYDRAULIC POWER UNIT

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

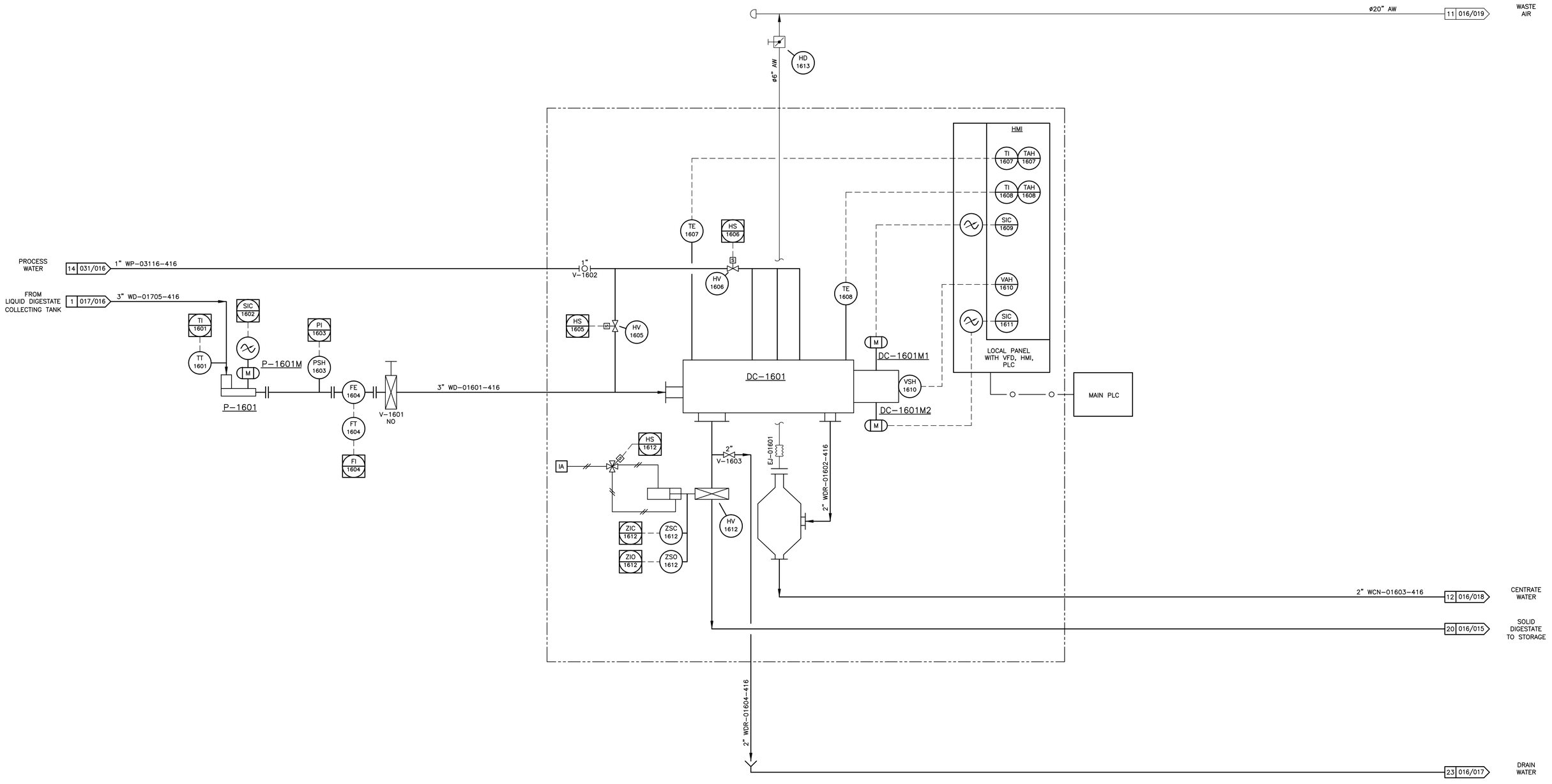
P & I DIAGRAM
SCREW PRESS

Hitachi Zosen INOVA

WEIGHT: NA | SCALE: NA
TOL UNO: NA | SHEET 1 OF 1

DRAWING NUMBER: Y–3321 I 312 015

REV: A



P-1601
LIQUID DIGESTATE
PUMP
30 gpm
67.8 ft TDH

P-1601M
LIQUID DIGESTATE
PUMP MOTOR

DC-1601
DECANTER

DC-1601M1
DECANTER
BOWL MOTOR

DC-1601M2
DECANTER
SCROLL MOTOR

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

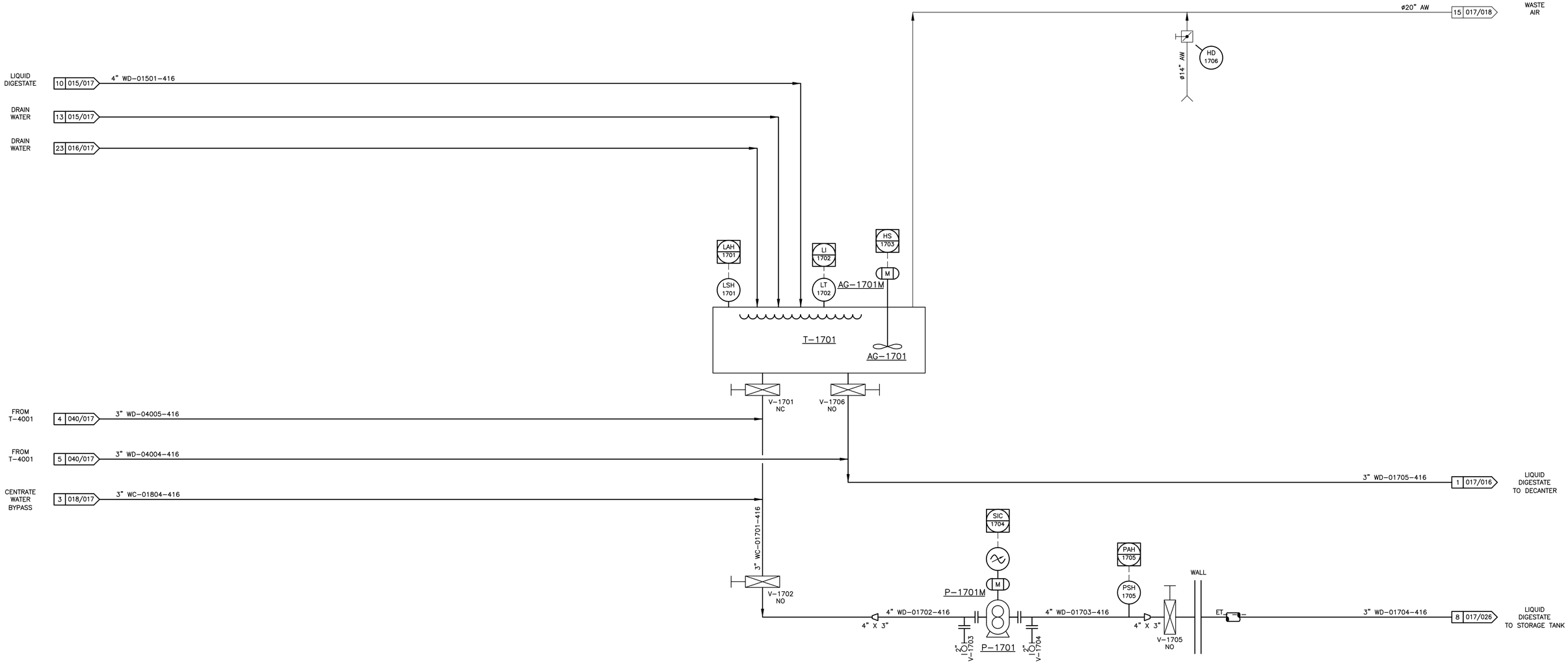
P & I DIAGRAM
DECANTER

Hitachi Zosen INOVA

WEIGHT: NA | SCALE: NA
TOL UNO: NA | SHEET 1 OF 1

DRAWING NUMBER
Y-3321 I 312 016

REV
A



T-1701
LIQUID DIGESTATE COLLECTING TANK

AG-1701
LIQUID DIGESTATE AGITATOR

P-1701
LIQUID DIGESTATE PUMP
70 gpm
21.9 ft TDH

AG-1701M
LIQUID DIGESTATE AGITATOR MOTOR

P-1701M
LIQUID DIGESTATE PUMP MOTOR

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
LIQUID DIGESTATE COLLECTING TANK

Hitachi Zosen INOVA

WEIGHT: NA | SCALE: NA
TOL UNO: NA | SHEET 1 OF 1

DRAWING NUMBER: Y-3321 I 312 017
REV: A

WASTE AIR

15 017/018 ø20" AW

ø20" AW 15 018/019

WASTE AIR

CENTRATE WATER

12 016/018 2" WCN-01603-416

LAH 1801

LSH 1801

ø10" AW

LI 1802

LT 1802

T-1801

V-1801 NO

3" WC-01801-416

FROM T-4101

4 041/018 3" WC-04101-416

HS 1803

IA

ZIO 1803

ZIC 1803

ZSO 1803

ZSC 1803

LV 1803

3" WC-01804-416 3 018/017

CENTRATE WATER BYPASS

2 1/2" WP-03114-416 031/018 2

PROCESS WATER

HS 1804

IA

ZIO 1804

ZIC 1804

ZSO 1804

ZSC 1804

HV 1804

SEE NOTE 1

SIC 1805

P-1801M

M

2" V-1802

P-1801

SEE NOTE 1

3" WC-01802-416

3" X 2 1/2"

2" V-1803

2" V-1805

V-1804 NO

SEE NOTE 1

2 1/2" WC-01803-416 7 018/011

CENTRATE WATER TO DIGESTER

HS 1806

IA

ZIO 1806

ZIC 1806

ZSO 1806

ZSC 1806

HV 1806

SEE NOTE 1

3" WDR-03001-416 030/018 20

FROM SUMP 1

T-1801
CENTRATE TANK

P-1801
CENTRATE PUMP

35 gpm
33.1 ft TDH

P-1801M
CENTRATE PUMP
MOTOR

NOTES:
1. SUPPLIED BY HZI IN CORE MODULE.

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
CENTRATE TANK

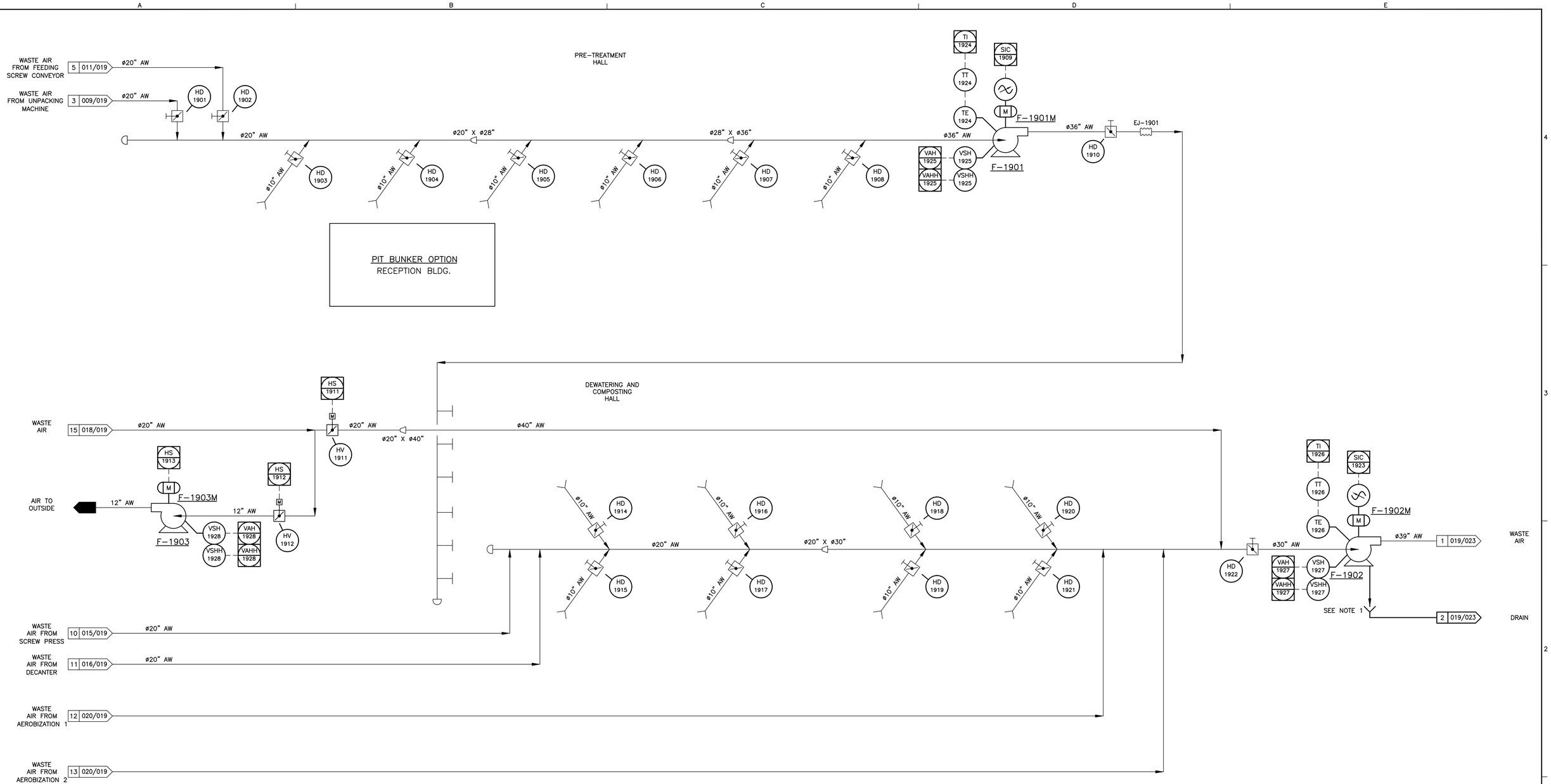
Hitachi Zosen INOVA

WEIGHT: NA SCALE: NA

TOL UNO: NA SHEET 1 OF 1

DRAWING NUMBER Y-3321 I 312 018

REV A



F-1901
EXHAUST FAN 1
CFM: 24,000
STATIC PRESSURE: 12.0"
RPM: 1,750
DRIVE: DIRECT

F-1902
EXHAUST FAN 2
CFM: 44,000
STATIC PRESSURE: 15.0"
RPM: 1,200
DRIVE: DIRECT

F-1903
EMERGENCY EXHAUST FAN
CFM: 2,120
STATIC PRESSURE: 8.0"
RPM: 3,450
DRIVE: BELT

F-1901M
EXHAUST FAN 1 MOTOR
HP: 75
POWER: 480-3-60

F-1902M
EXHAUST FAN 2 MOTOR
HP: 150
POWER: 480-3-60

F-1902M
EXHAUST FAN 2 MOTOR
HP: 150
POWER: 460-3-60

NOTES:
1. CATCH BASIN-SEE PLUMBING DRAWINGS.

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

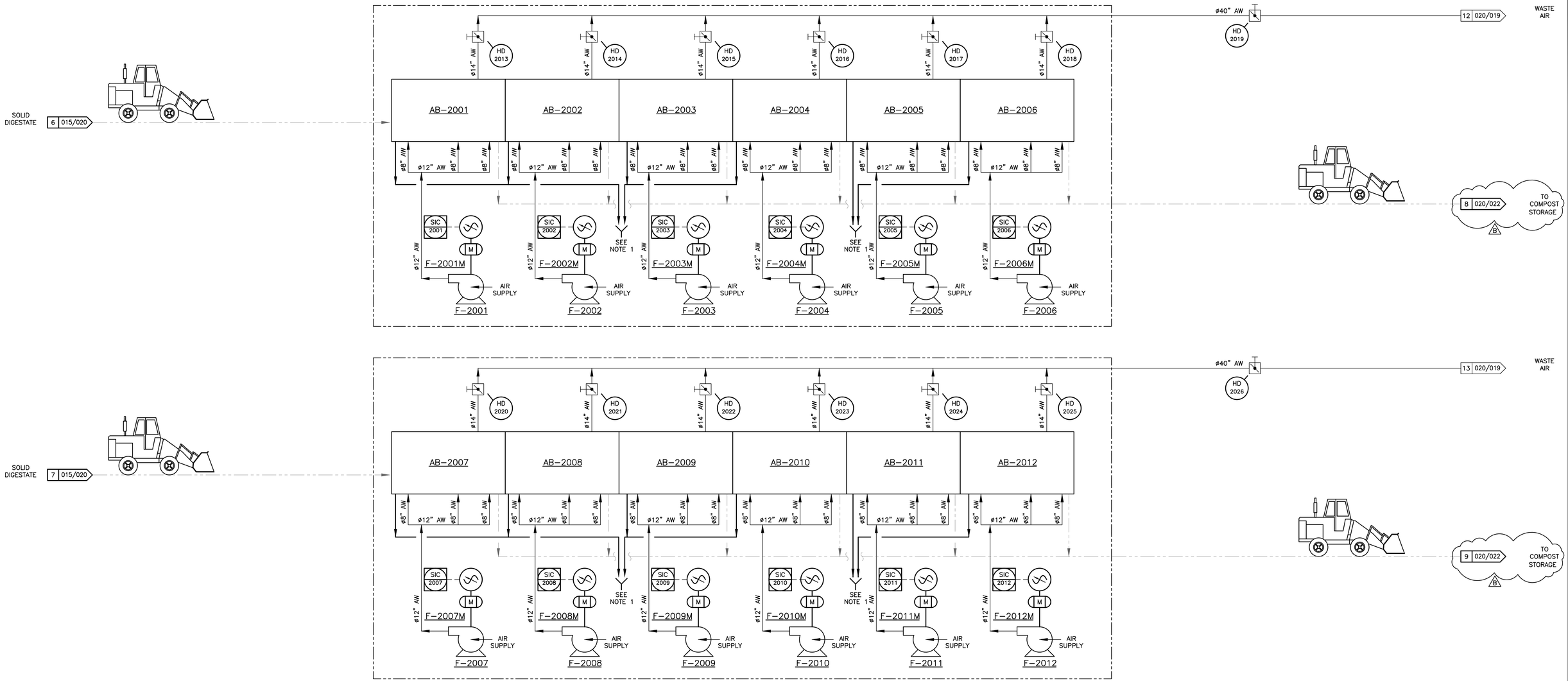
P & I DIAGRAM
VENTILATION SYSTEM

Hitachi Zosen INOVA

WEIGHT:	NA	SCALE:	NA
TOL UNO:	NA	SHEET	1 OF 1

DRAWING NUMBER: Y-3321 I 312 019
REV: A

AB–2001 AEROBIZATION BOX 1 | AB–2002 AEROBIZATION BOX 2 | AB–2003 AEROBIZATION BOX 3 | AB–2004 AEROBIZATION BOX 4 | AB–2005 AEROBIZATION BOX 5 | AB–2006 AEROBIZATION BOX 6 | AB–2007 AEROBIZATION BOX 7 | AB–2008 AEROBIZATION BOX 8 | AB–2009 AEROBIZATION BOX 9 | AB–2010 AEROBIZATION BOX 10 | AB–2011 AEROBIZATION BOX 11 | AB–2012 AEROBIZATION BOX 12



F–2001
AB–2001
FAN
CFM: 1,788
STATIC PRESSURE: 15.25"
RPM: 2,975
DRIVE: DIRECT

F–2002
AB–2002
FAN
CFM: 1,788
STATIC PRESSURE: 15.25"
RPM: 2,975
DRIVE: DIRECT

F–2003
AB–2003
FAN
CFM: 1,788
STATIC PRESSURE: 15.25"
RPM: 2,975
DRIVE: DIRECT

F–2004
AB–2004
FAN
CFM: 1,788
STATIC PRESSURE: 15.25"
RPM: 2,975
DRIVE: DIRECT

F–2005
AB–2005
FAN
CFM: 1,788
STATIC PRESSURE: 15.25"
RPM: 2,975
DRIVE: DIRECT

F–2006
AB–2006
FAN
CFM: 1,788
STATIC PRESSURE: 15.25"
RPM: 2,975
DRIVE: DIRECT

F–2001M
AB–2001 FAN
MOTOR
HP: 25
POWER: 480–3–60

F–2002M
AB–2002 FAN
MOTOR
HP: 25
POWER: 480–3–60

F–2003M
AB–2003 FAN
MOTOR
HP: 25
POWER: 480–3–60

F–2004M
AB–2004 FAN
MOTOR
HP: 25
POWER: 480–3–60

F–2005M
AB–2005 FAN
MOTOR
HP: 25
POWER: 480–3–60

F–2006M
AB–2006 FAN
MOTOR
HP: 25
POWER: 480–3–60

F–2007
AB–2007
FAN
CFM: 1,788
STATIC PRESSURE: 15.25"
RPM: 2,975
DRIVE: DIRECT

F–2008
AB–2008
FAN
CFM: 1,788
STATIC PRESSURE: 15.25"
RPM: 2,975
DRIVE: DIRECT

F–2009
AB–2009
FAN
CFM: 1,788
STATIC PRESSURE: 15.25"
RPM: 2,975
DRIVE: DIRECT

F–2010
AB–2010
FAN
CFM: 1,788
STATIC PRESSURE: 15.25"
RPM: 2,975
DRIVE: DIRECT

F–2011
AB–2011
FAN
CFM: 1,788
STATIC PRESSURE: 15.25"
RPM: 2,975
DRIVE: DIRECT

F–2012
AB–2012
FAN
CFM: 1,788
STATIC PRESSURE: 15.25"
RPM: 2,975
DRIVE: DIRECT

F–2007M
AB–2007 FAN
MOTOR
HP: 25
POWER: 480–3–60

F–2008M
AB–2008 FAN
MOTOR
HP: 25
POWER: 480–3–60

F–2009M
AB–2009 FAN
MOTOR
HP: 25
POWER: 480–3–60

F–2010M
AB–2010 FAN
MOTOR
HP: 25
POWER: 480–3–60

F–2011M
AB–2011 FAN
MOTOR
HP: 25
POWER: 480–3–60

F–2012M
AB–2012 FAN
MOTOR
HP: 25
POWER: 480–3–60

NOTES:
1. COLLECTION BASIN–SEE PLUMBING DRAWING.
2. CATCH BASIN–SEE PLUMBING DRAWING.

REV	DATE	DESCRIPTION	BY	CHK
B	9/22/17	REVISED AS NOTED	LAA	MB
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location
SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

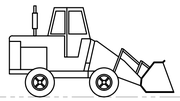
	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

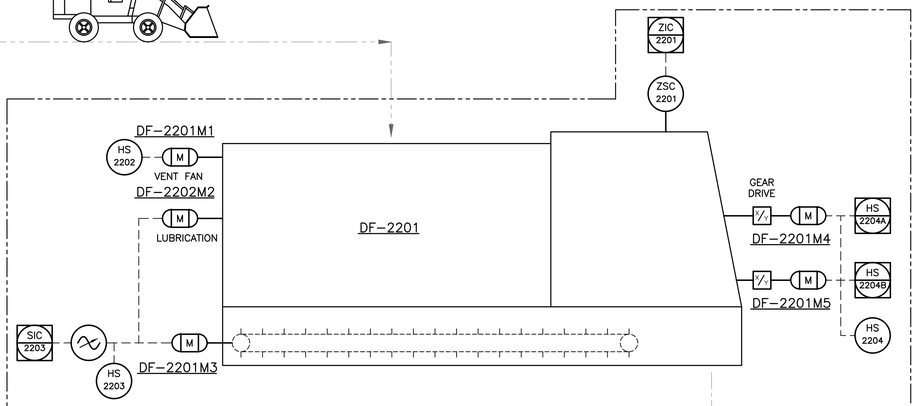
P & I DIAGRAM
AEROBIZATION

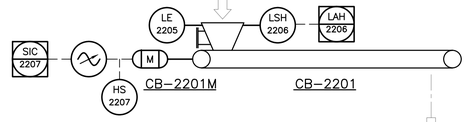
WEIGHT: NA | SCALE: NA
TOL UNO: NA | SHEET 1 OF 1

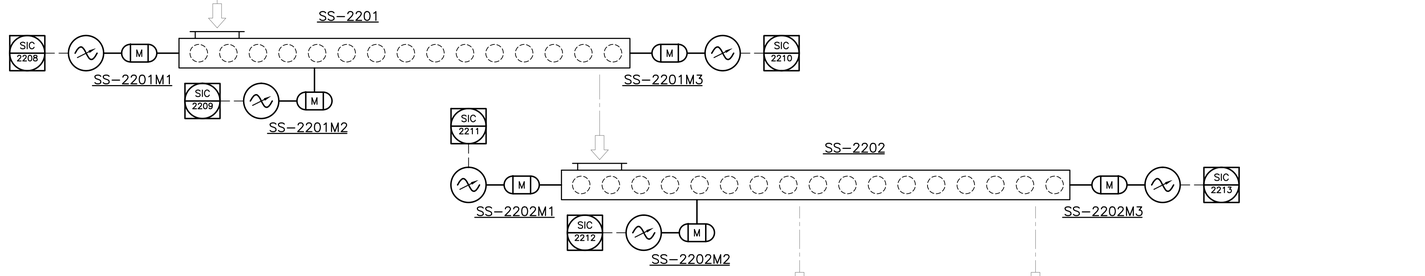
Hitachi Zosen INOVA

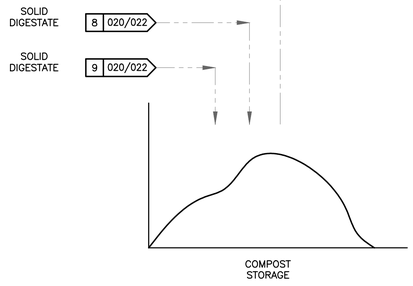
DRAWING NUMBER Y–3321 I 312 020 | REV B

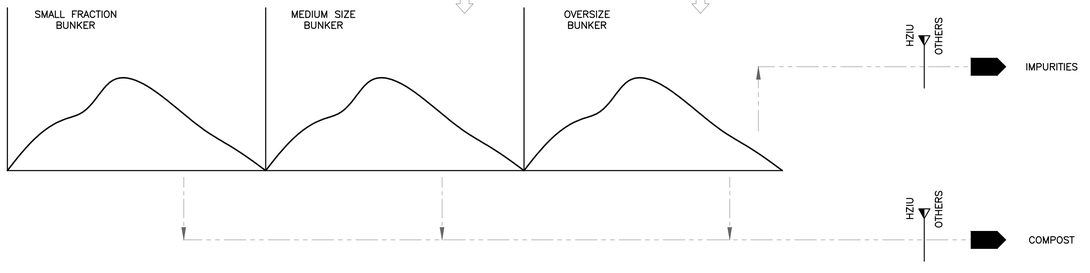












DF-2201 DOSING FEEDER	CB-2201 CONVEYOR BELT	SS-2201 STAR SIEVE 1
DF-2201M1 DOSING FEEDER MOTOR 1	CB-2201M CONVEYOR BELT MOTOR	SS-2201M1 STAR SIEVE 1 MOTOR 1
DF-2201M2 DOSING FEEDER MOTOR 2		SS-2201M2 STAR SIEVE 1 MOTOR 2
DF-2201M3 DOSING FEEDER MOTOR 3		SS-2201M3 STAR SIEVE 1 MOTOR 3
DF-2201M4 DOSING FEEDER MOTOR 4		
DF-2201M5 DOSING FEEDER MOTOR 5		

SS-2202
STAR SIEVE 2
SS-2202M1 STAR SIEVE 2 MOTOR 1
SS-2202M2 STAR SIEVE 2 MOTOR 2
SS-2202M3 STAR SIEVE 2 MOTOR 3

REV	DATE	DESCRIPTION	BY	CHK
A	9/22/17	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

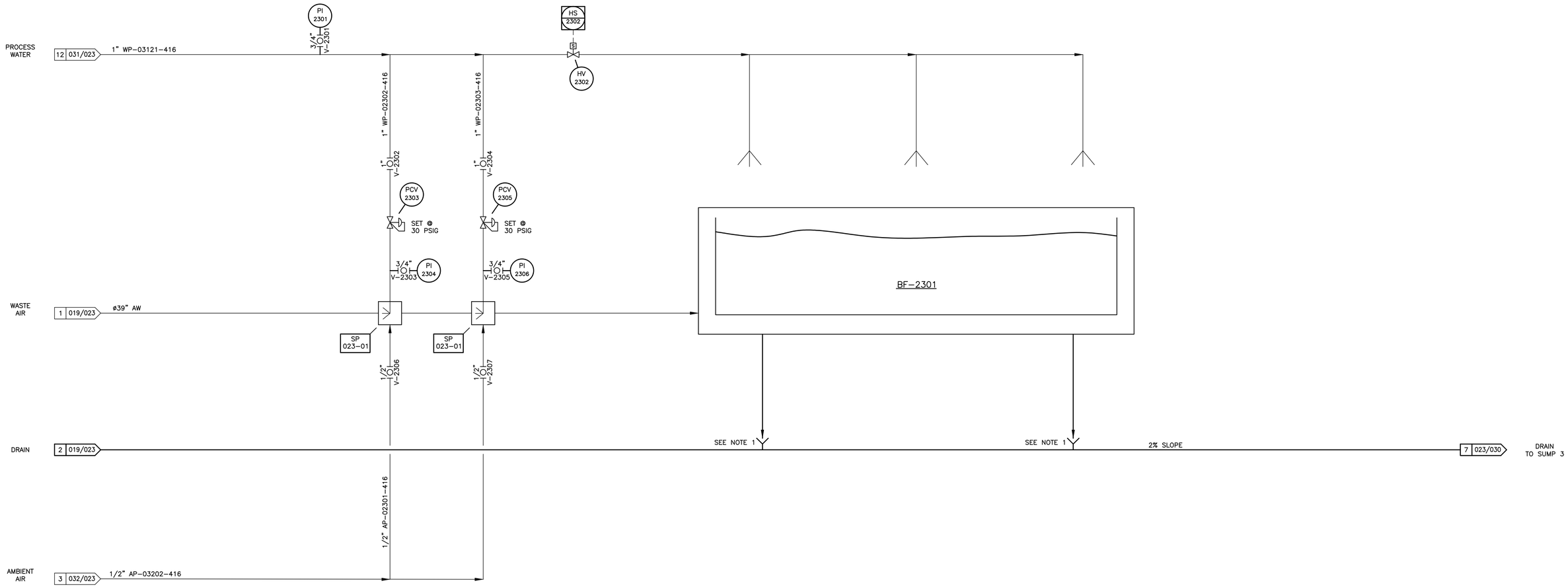
	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
COMPOSTING SYSTEM

Hitachi Zosen INOVA

WEIGHT:	NA	SCALE:	NA
TOL UNO:	NA	SHEET	1 OF 1

DRAWING NUMBER: Y-3321 I 312 031
REV: A



NOTES:
1. CATCH BASIN–SEE PLUMBING DRAWING.

BF–2301
BIOFILTER

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

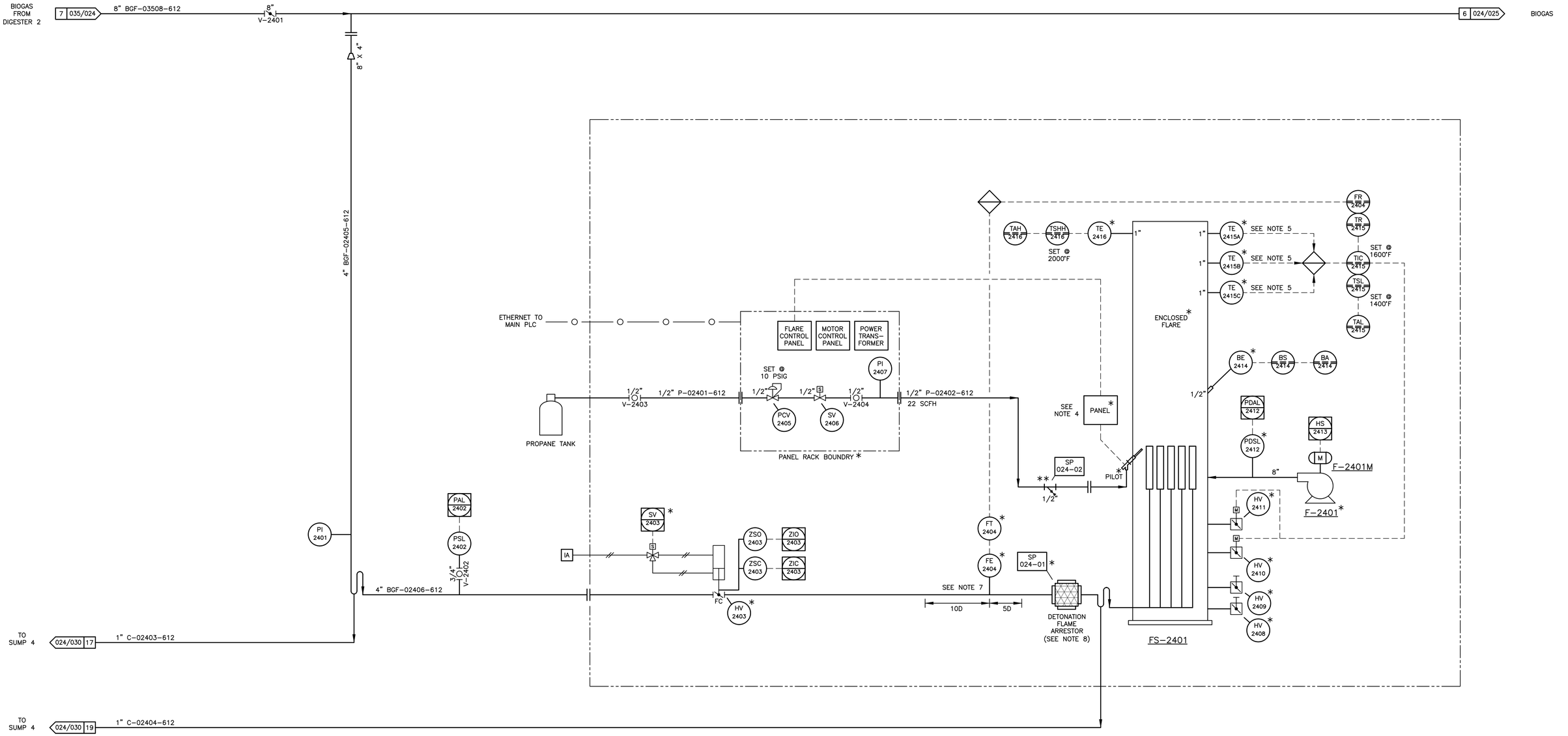
	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
BIOFILTER

Hitachi Zosen INOVA

WEIGHT: NA | SCALE: NA
TOL UNO: NA | SHEET 1 OF 1

DRAWING NUMBER: Y-3321 I 312 023
REV: A



FS-2401
BIOGAS
FLARE SYSTEM

F-2401
FLARE SYSTEM
FAN

F-2401M
FLARE SYSTEM
FAN MOTOR

NOTES:

1. * – SUPPLIED BY JOHN ZINC CO. AND SHIPPED LOOSE FOR FIELD INSTALLATION.
2. ** – SUPPLIED BY OTHERS (NOT BY JOHN ZINC CO.).
3. ELECTRICAL AREA CLASSIFICATION: NON-HAZARDOUS.
4. IGNITION TRANSFORMER IS INSIDE PANEL AND MOUNTED ON FLARE.
5. TEMPERATURE CONTROL THERMOCOUPLE (TE-2415) IS SELECTED DEPENDING ON GAS FLOW RATE TO FLARE. EQUIPMENT DAMAGE MAY OCCUR IF THE IMPROPER ELEVATION IS SELECTED.
6. TWO DAMPERS ARE AUTOMATIC (HV-2412 & HV-2413) AND TWO DAMPERS ARE MANUAL (HV-2410 & HV-2411).
7. LOCATE FLOW ELEMENT WITH 10 DIAMETERS OF STRAIGHT UNDISTURBED FLOW UPSTREAM AND 5 DIAMETERS DOWNSTREAM.
8. LOCATE FLAME ARRESTOR WITH 5 DIAMETERS OF STRAIGHT UNDISTURBED FLOW UPSTREAM.
9. THERMOCOUPLE WIRE AND IGNITION WIRE SUPPLIED BY JOHN ZINC CO. AND SHIPPED LOOSE FOR FIELD INSTALLATION.

REV	DATE	DESCRIPTION	BY	CHK
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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

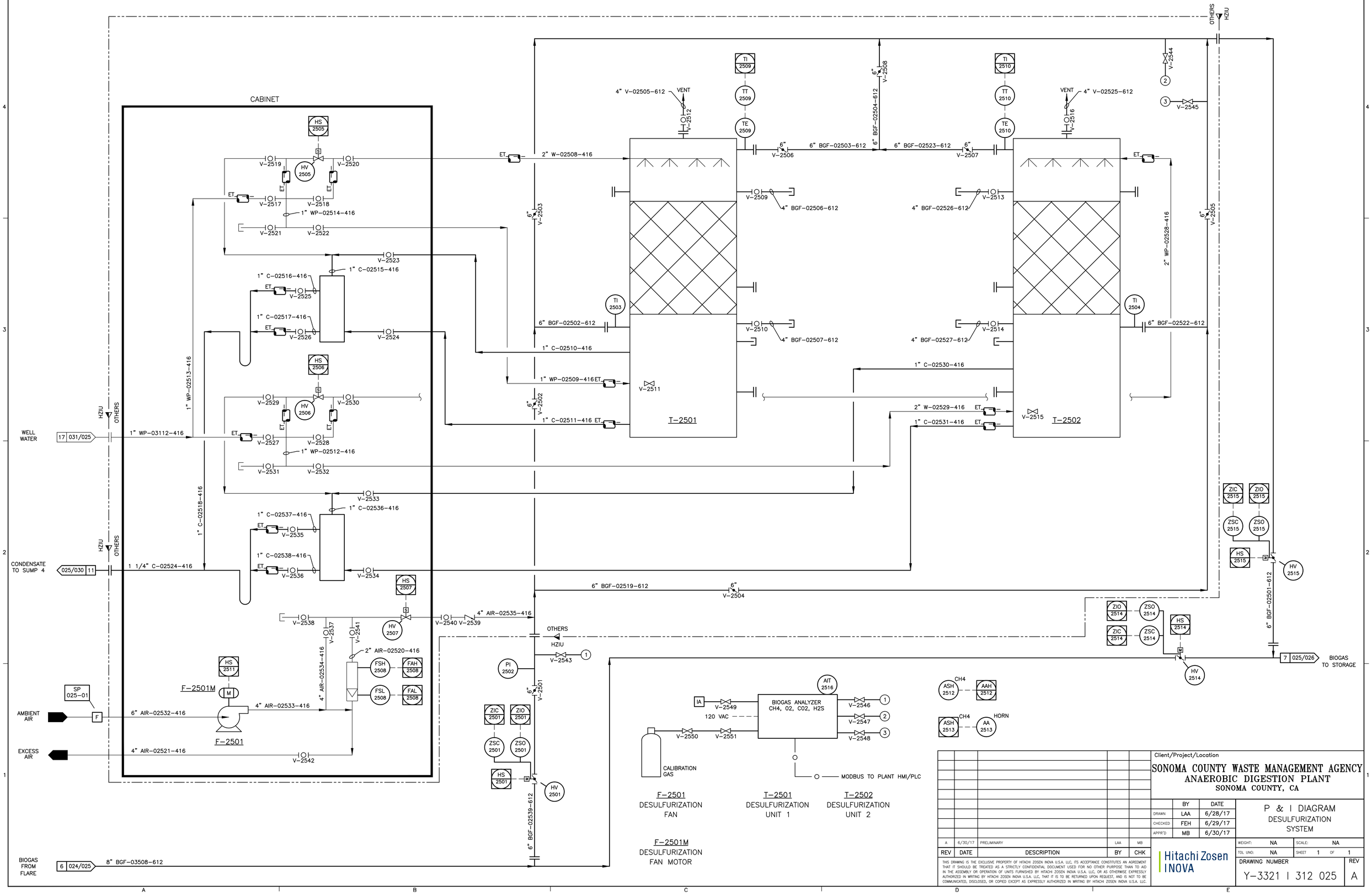
	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
BIOGAS FLARE SYSTEM

Hitachi Zosen INOVA

WEIGHT:	NA	SCALE:	NA
TOL UNO:	NA	SHEET	1 OF 1

DRAWING NUMBER: Y-3321 I 312 024
REV: A



REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

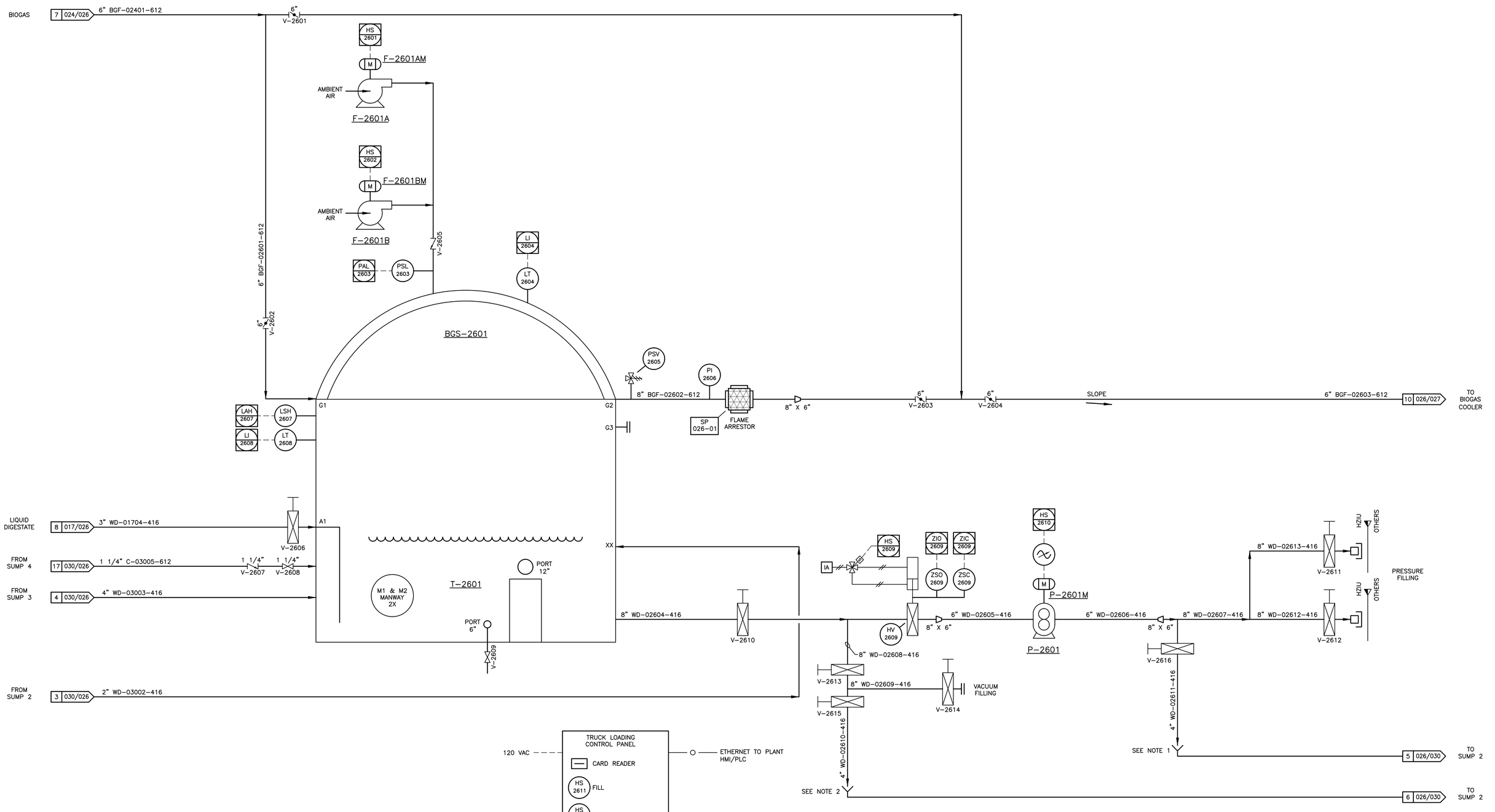
	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
DESULFURIZATION SYSTEM

Hitachi Zosen INOVA

WEIGHT:	NA	SCALE:	NA
TOL UNO:	NA	SHEET	1 OF 1

DRAWING NUMBER: Y-3321 I 312 025
REV: A



F-2601A BIOGAS BLOWER 1

F-2601B BIOGAS BLOWER 2

BGS-2601 BIOGAS STORAGE

T-2601 LIQUID DIGESTATE STORAGE TANK

P-2601 LIQUID DIGESTATE TRANSFER PUMP
620 gpm
16.3 ft TDH

F-2601AM BIOGAS BLOWER 1 MOTOR

F-2601BM BIOGAS BLOWER 2 MOTOR

P-2601M LIQUID DIGESTATE TRANSFER PUMP MOTOR

NOTES:
1. COLLECTION BASIN–SEE PLUMBING DRAWING P-3316-P005.
2. FLOOR DRAIN–SEE PLUMBING DRAWING P-3316-P005.

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

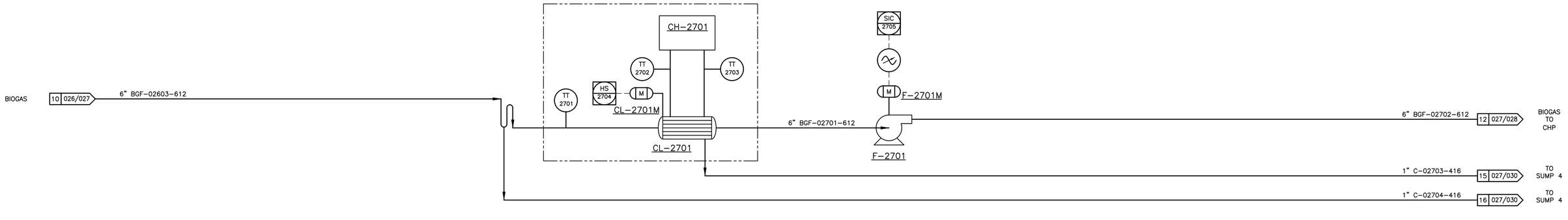
	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
BIOGAS STORAGE

Hitachi Zosen INOVA

WEIGHT: NA | SCALE: NA
TOL UNO: NA | SHEET 1 OF 1

DRAWING NUMBER: Y-3321 I 312 026 | REV: A



CL-2701
BIOGAS
COOLER/CONDENSER

CH-2701
BIOGAS CHILLER

F-2701
BIOGAS FAN

CL-2701M
BIOGAS
COOLER/CONDENSER MOTOR

F-2701M
BIOGAS FAN
MOTOR

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
BIOGAS
COOLER/CONDENSER

Hitachi Zosen INOVA

WEIGHT:	NA	SCALE:	NA
TOL UNO:	NA	SHEET 1	OF 1

DRAWING NUMBER
Y-3321 I 312 027

REV
A

COMPRESSED AIR
4 | 031/028
1" AP-03205-416

PROCESS WATER
1 | 031/028
1" WP-03124-416

BIOGAS
12 | 027/028
6" BGF-02702-612

FLANGED BIOGAS CONNECTION

FLANGED PROCESS WATER CONNECTION

FLANGED COMP. AIR CONNECTION

EXHAUST

EXHAUST SILENCER

CATALYST

GAS MIXTURE RADIATOR

GAS MIXTURE CIRCUIT PUMP

INTERNAL COMBUSTION ENGINE

4" W-02801-416
10 | 028/029
TO HEAT DISTRIBUTION

4" WHS-02901-416
029/028 | 11
RETURN

JACKET WATER RADIATOR

ENGINE CIRCUIT PUMP

OPTIONAL GAS BLOWER

GAS BLOWER

OPTIONAL PRE-PRESSURE REGULATOR (NEEDED IF GAS BLOWER IS NOT IN 2G'S SCOPE)

PRE-PRESSURE REGULATOR

DOUBLE SOLENOID GAS REGULATION TRAIN INCLUDING FLAME ARRESTOR

ZERO PRESSURE REGULATOR

TREATED BIOGAS

RAW BIOGAS

BIOGAS ANALYZER
CH4-
CO2-
O2-
H2S-

OPTIONAL BIOGAS ANALYZER

OIL PUMP

WASTE OIL TANK

FRESH OIL TANK

OPTIONAL OIL TANKS AND PUMP

SEE NOTE 1

CCR-1
CONTAINER CONTROL ROOM
W/ HMI, PLC, MCC

NOTES:
1. BY CHP VENDOR.

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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SONOMA COUNTY WASTE MANAGEMENT AGENCY
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SONOMA COUNTY, CA

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DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

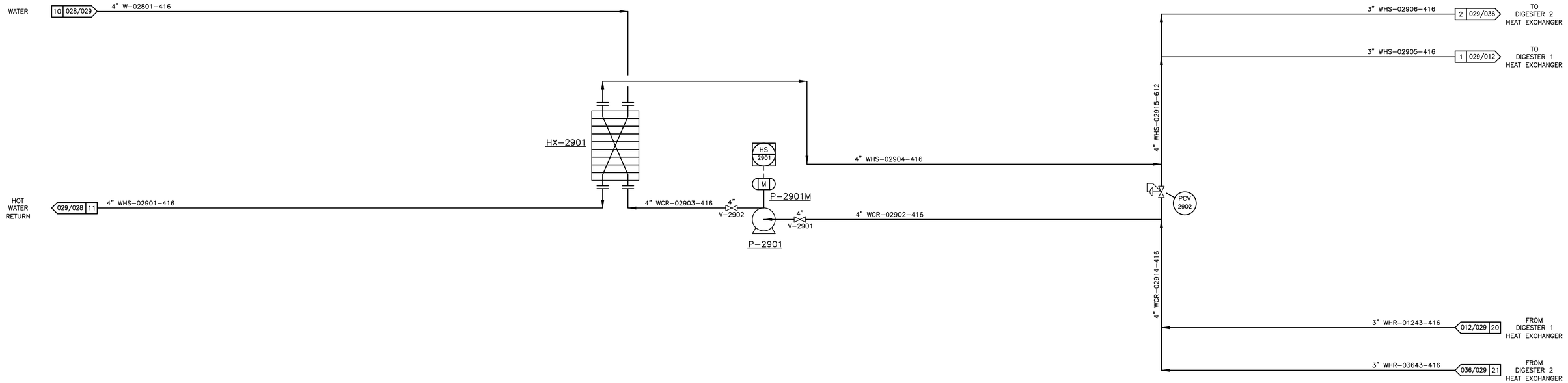
P & I DIAGRAM
GAS ENGINE

Hitachi Zosen INOVA

WEIGHT: NA | SCALE: NA
TOL UNO: NA | SHEET 1 OF 1

DRAWING NUMBER
Y-3321 I 312 028

REV
A



HX-2901
HEAT EXCHANGER

P-2901
HEATING CIRCUIT PUMP

P-2901M
HEATING CIRCUIT PUMP MOTOR

NOTES:
1. BY CHP VENDOR.

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

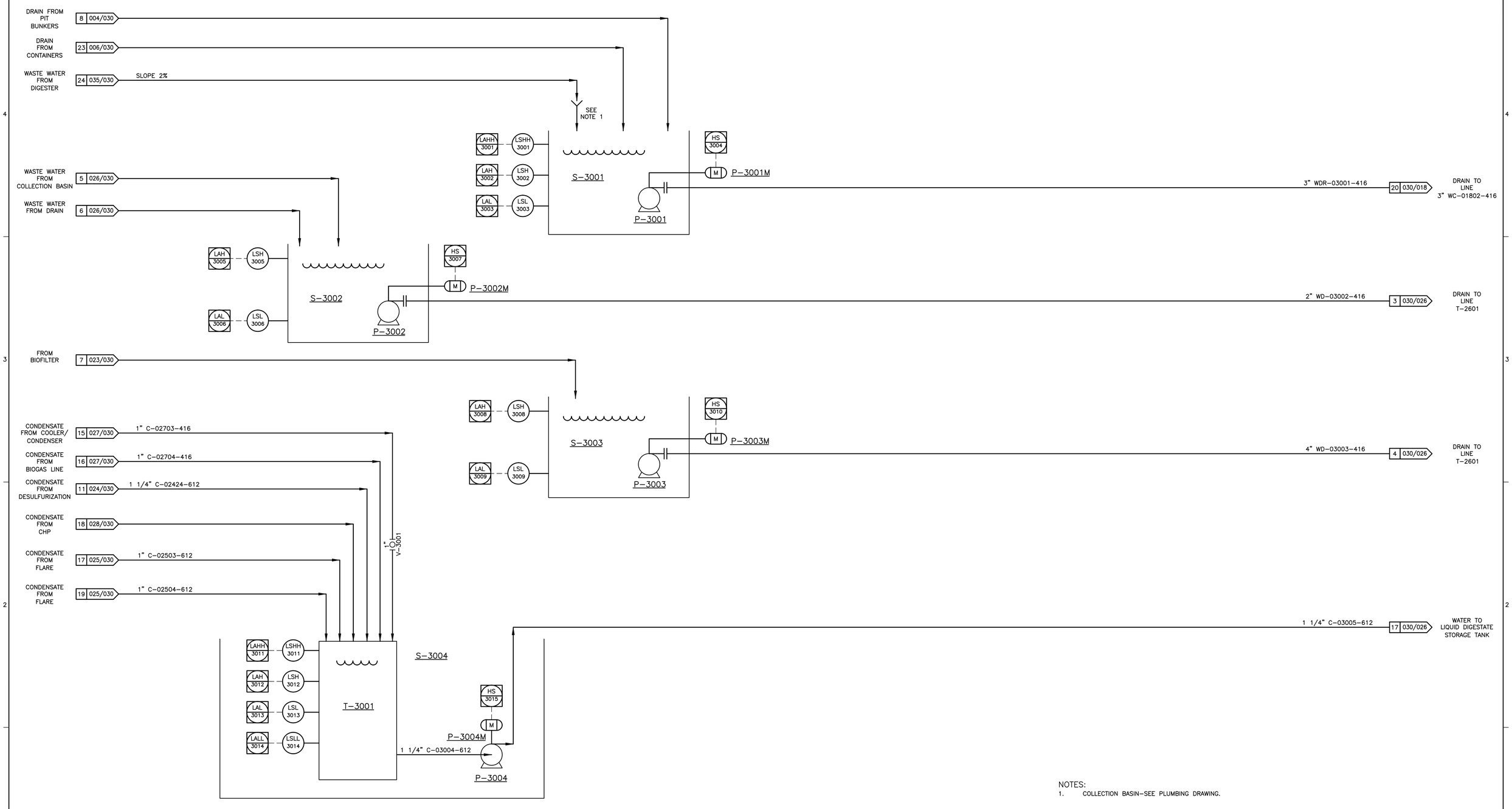
P & I DIAGRAM
HOT WATER DISTRIBUTION

Hitachi Zosen INOVA

WEIGHT:	NA	SCALE:	NA
TOL UNO:	NA	SHEET 1	OF 1

DRAWING NUMBER
Y-3321 I 312 029

REV
A



NOTES:
1. COLLECTION BASIN–SEE PLUMBING DRAWING.

S-3001 SUMP 1

P-3001 SUMP 1 PUMP
90 gpm
17.3 ft TDH

P-3001M SUMP 1 PUMP MOTOR

S-3002 LIQUID DIGESTATE SUMP

P-3002 LIQUID DIGESTATE SUMP PUMP
45 gpm
35.5 ft TDH

P-3002M LIQUID DIGESTATE SUMP PUMP MOTOR

S-3003 SUMP 3

P-3003 SUMP 3 PUMP

P-3003M SUMP 3 PUMP MOTOR

S-3004 SUMP 4

P-3004 CONDENSATE PUMP

P-3004M CONDENSATE PUMP MOTOR

T-3001 CONDENSATE COLLECTION TANK

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

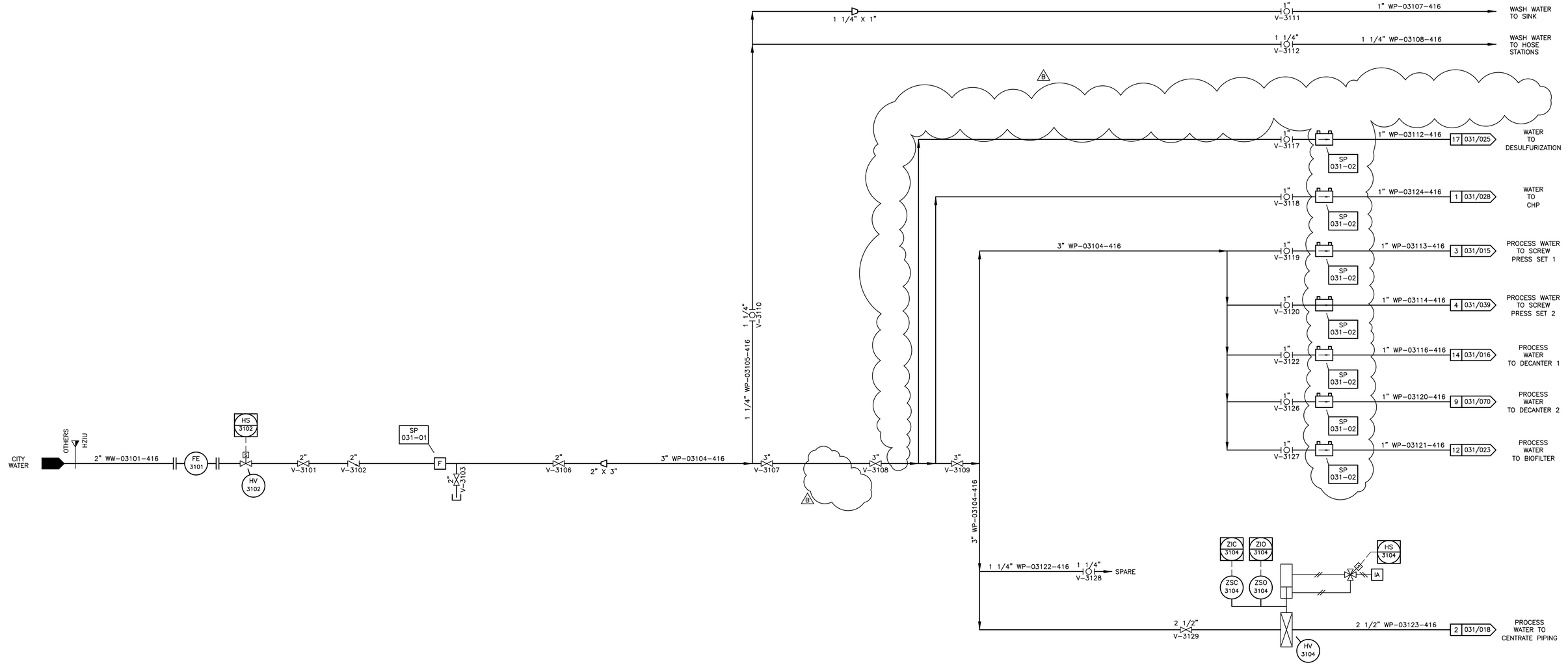
	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
SUMP SYSTEM

Hitachi Zosen INOVA

WEIGHT: NA SCALE: NA
TOL UNO: NA SHEET 1 OF 1

DRAWING NUMBER Y-3321 I 312 030 REV A



REV	DATE	DESCRIPTION	BY	CHK
B	9/22/17	REVISED AS NOTED	LAA	MB
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

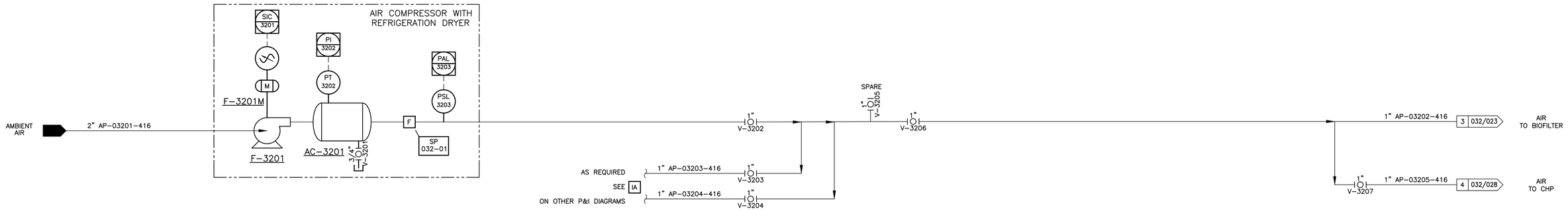
	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
WATER UTILITY

Hitachi Zosen INOVA

WEIGHT:	NA
SCALE:	NA
TOL UNO:	NA
SHEET	1 OF 1

DRAWING NUMBER: Y-3321 I 312 031
REV: B



F-3201
COMPRESSOR
FAN

AC-3201
COMPRESSOR SKID W/
REFRIGERANT DRYER

F-3201M
COMPRESSOR FAN
MOTOR

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
AIR UTILITY

Hitachi Zosen INOVA

WEIGHT:	NA
SCALE:	NA
TOL UNO:	NA
SHEET	1 OF 1

DRAWING NUMBER
Y-3321 I 312 032

REV
A


AIR VENT FROM DIGESTER 1
11 011/035
ø8" V
5 035/040
WASTE AIR
BIOGAS
6 011/035
SLOPE 2%
8" BGF-03508-612
7 035/024
BIOGAS
8" X 6"
SC-3501
FEEDING SCREW CONVEYOR
SC-3501M
FEEDING SCREW CONVEYOR MOTOR
EJ-3501
ORGANIC WASTE FROM CB-0702
1 007/035
SEE NOTE 1
SEE NOTE 5
3" V-3509 LC
6" V-3513
SP 035-01
FLAME ARRESTOR
6" X 4"
FT 3514
FI 3514
6" V-3514
6" BGF-03506-612
PSV 3515
3" BGF-03505-612
3/4" V-3512
3/4" V-3511
PT 3513
PI 3513
3/4" V-3510
PI 3512
LE 3501
LSH 3501
LAH 3501
SIC 3502
SAL 3502
SSL 3502
HS 3505
TI 3507
TT 3507
TE 3507
LI 3508
LT 3508
TI 3509
TT 3509
TE 3509
6" BGF-03504-612
LI 3510
LT 3510
TI 3511
TT 3511
TE 3511
SG 3505
SG 3506
FI 3503
FIT 3503
FE 3503
IA
HS 3504
ZSC 3504
ZIC 3504
ZSO 3504
ZIO 3504
HV 3504
SAMPLE PORT
RUPTURE DISC
10" BIOM-01302-416
035/037 8
INOCULATION RETURN
SEE NOTE 3
V-3504
N1
FROM CENTRATE TANK
7 039/035
2 1/2" WC-01803-416
V-3501
8"
SPARE
DM-3501
DM-3501M
ZS 3528
ZA 3528
SEALING UNIT
SAL 3516
ZA 3517
SSL 3516
ZS 3517
FAL 3520
LIQUID WASTE
1 010/035
1/2" WSL-01012-513
V-3502
3/4" V-3508
PI 3518
PI 3519
PI 3521
FSL 3520
1/2" LO-03503-416
DLS-3502
HS 3522
SSL 3527
SAL 3527
SIC 3529
N2
V-3505
LOCAL CONTROL PANEL NEAR SCREW
HS 3530 EMERGENCY SWITCH
HS 3531 MAINTENANCE SWITCH
PI 3526
V-3503
MANWAY
D-3501
SEE NOTE 4 & NOTE 7
16" BIOM-03502-416
9 035/037
TO HYDRAULIC DIGESTATE PUMP
V-3506
FAL 3525
FSL 3525
PI 3524
HS 3523
DLS-3501
1/2" LO-03501-416
SEE NOTE 6
MH4
ASH 3532
25% LEL
AAH 3532
ASH 3533
AA 3533
HORN
ASH 3534
AAH 3534
ASH 3535
AA 3535
DRAIN WATER
22 011/035
SLOPE 2%
24 035/030
DRAIN TO SUMP 1

DLS-3501 DIGESTER 2 LUBE SYSTEM 1

DLS-3502 DIGESTER 2 LUBE SYSTEM 2

DM-3501 DIGESTER 2 MIXER

D-3501 DIGESTER 2

DM-3501M DIGESTER 2 MIXER MOTOR

NOTES:

1. LOWER PART OF HOPPER WITH LEVEL INDICATORS SUPPLIED BY HZI, TOP COVER AND CONNECTION TO BELT CONVEYOR SUPPLIED BY HZIU.
2. FLANGE DISCHARGE GATE VALVE SUPPLIED BY HZI, DISCHARGE PIPE TO DEWATERING UNIT SUPPLIED BY HZIU.
3. INSULATION OF INOCULATION PIPE BY HZIU.
4. INSULATION OF DIGESTER BY HZIU. LIGHTNING PROTECTION SUPPLIED BY HZIU. ASCENT PLATFORM SUPPLIED BY HZIU. LIGHTING BELOW FASSADE AND PLATFORM SUPPLIED BY HZIU.
5. INSTRUMENTATION AND EQUIPMENT BY HZI, PIPING BY HZIU.
6. SUPPLIED BY HZI.
7. FOR HEATING SYSTEM; SEE DRAWING Y-3321 I 312 036.

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

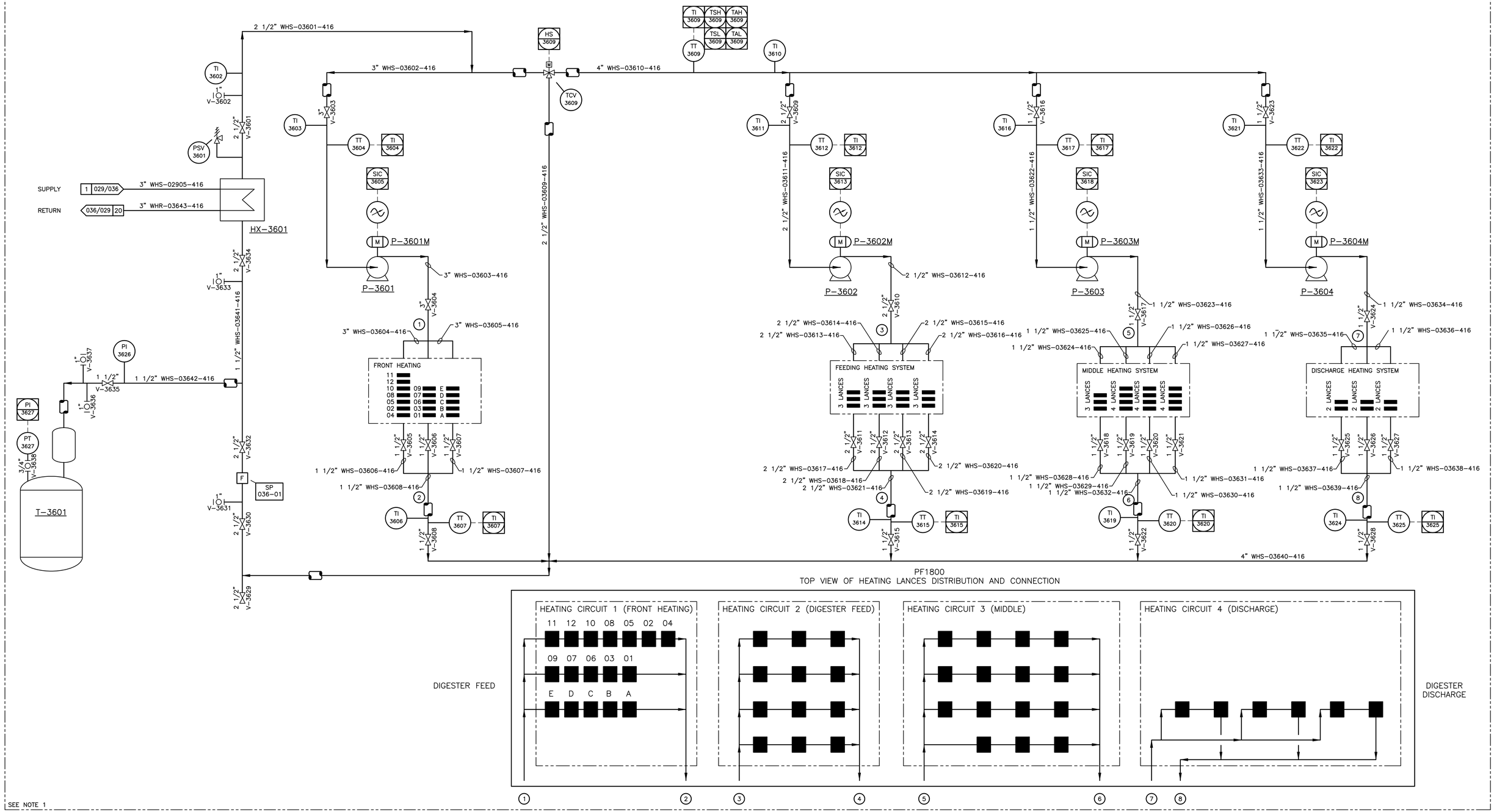
	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
DIGESTER 2

Hitachi Zosen INOVA

WEIGHT: NA SCALE: NA
TOL UNO: NA SHEET 1 OF 1

DRAWING NUMBER: Y-3321 I 312 035 REV A



T-3601
DIGESTER HEATING SYSTEM EXPANSION TANK

HX-3601
DIGESTER HEATING SYSTEM HEAT EXCHANGER

P-3601
DIGESTER HEATING SYSTEM RECIRC PUMP 1

P-3601M
DIGESTER HEATING SYSTEM RECIRC PUMP 1 MOTOR

P-3602
DIGESTER HEATING SYSTEM RECIRC PUMP 2

P-3602M
DIGESTER HEATING SYSTEM RECIRC PUMP 2 MOTOR

P-3603
DIGESTER HEATING SYSTEM RECIRC PUMP 3

P-3603M
DIGESTER HEATING SYSTEM RECIRC PUMP 3 MOTOR

P-3604
DIGESTER HEATING SYSTEM RECIRC PUMP 4

P-3604M
DIGESTER HEATING SYSTEM RECIRC PUMP 4 MOTOR

NOTES:
1. SUPPLIED BY HZI.

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location
SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

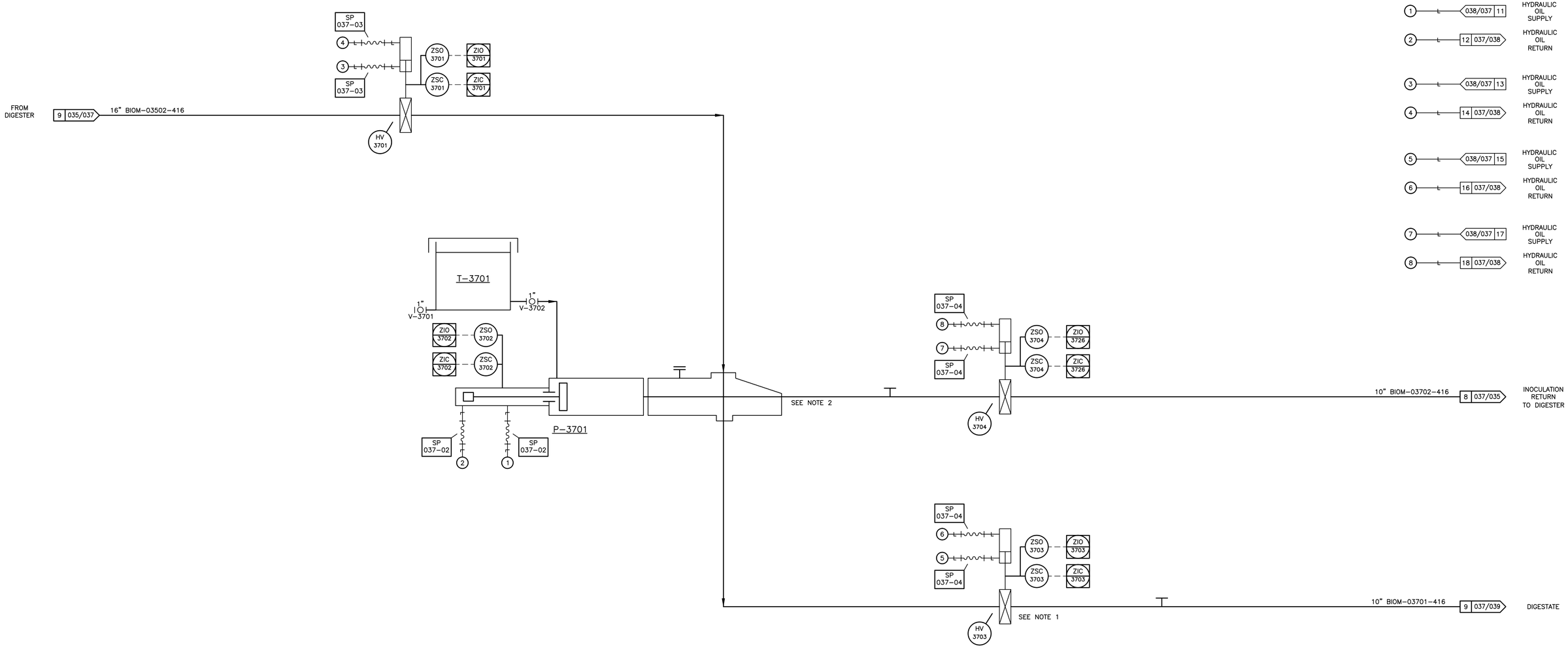
	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
HEATING SYSTEM
DIGESTER 2

Hitachi Zosen INOVA

WEIGHT:	NA
SCALE:	NA
TOL UNO:	NA
SHEET	1 OF 1

DRAWING NUMBER: Y-3321 I 312 036
REV: A



T-3701
DIGESTER DISCHARGE PUMP RESERVOIR

P-3701
DIGESTER DISCHARGE PUMP

NOTES:
1. FLANGE DISCHARGE GATE VALVE SUPPLIED BY HZI, DISCHARGE PIPE TO DEWATERING UNIT SUPPLIED BY HZIU.
2. INSULATION OF INOCULATION PIPE BY HZIU.

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

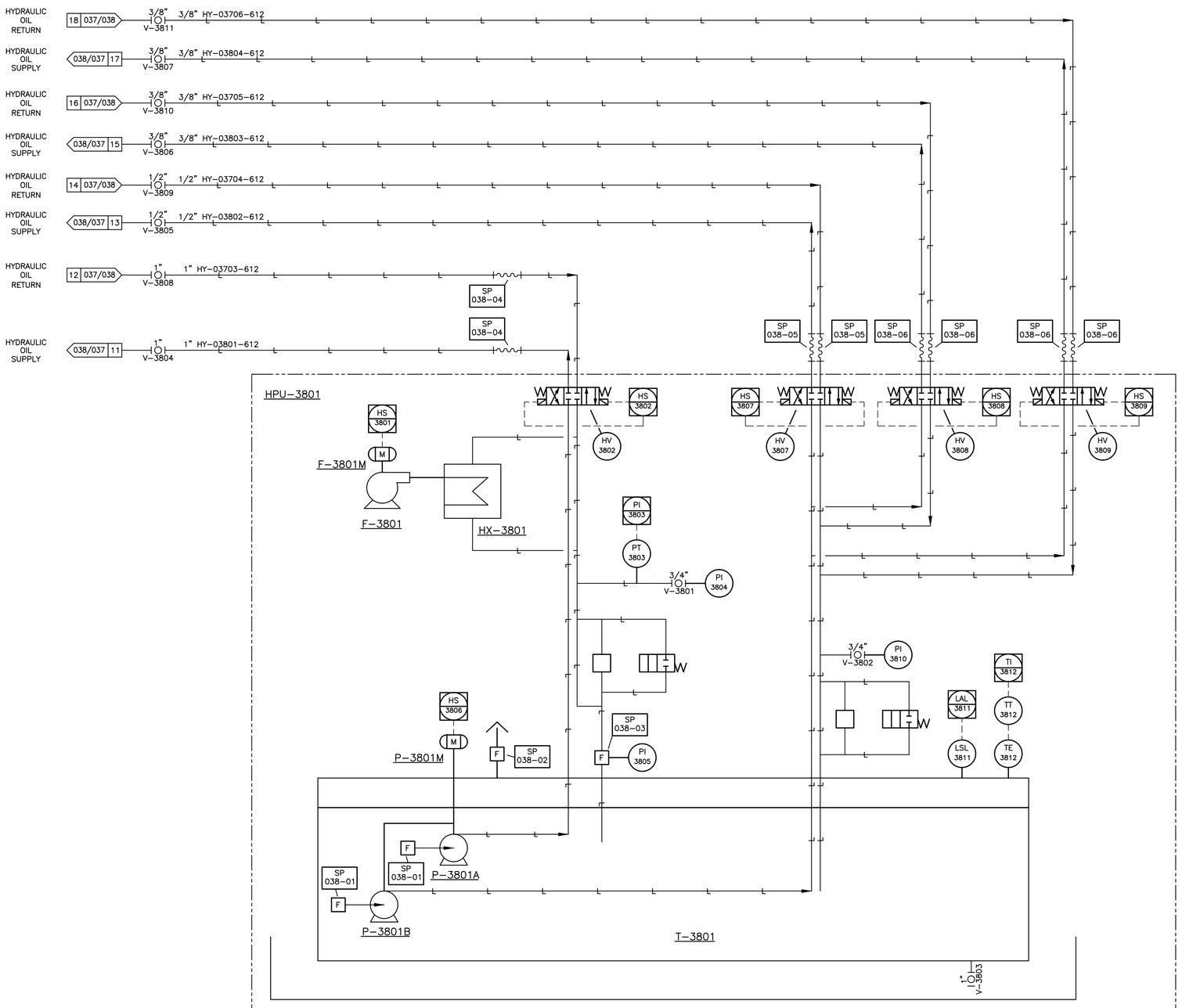
	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
DIGESTER 2 DISCHARGE PIPING
ORGANIC WASTE SINGLE PUMP

Hitachi Zosen INOVA

WEIGHT:	NA	SCALE:	NA
TOL UNO:	NA	SHEET	1 OF 1

DRAWING NUMBER Y-3321 I 312 037 REV A



SEE NOTE 1

HPU-3801
DIGESTER HYDRAULIC POWER UNIT

F-3801
HPU-3801 COOLING FAN

F-3801M
HPU-3801 COOLING FAN MOTOR

HX-3801
DIGESTER HYDRAULIC HEAT EXCHANGER

P-3801A
DIGESTER HYDRAULIC PUMP 1

P-3801B
DIGESTER HYDRAULIC PUMP 2

P-3801M
HYDRAULIC PUMPS MOTOR

T-3801
DIGESTER HYDRAULIC TANK

NOTES:
1. SUPPLIED BY HZI.
2. FLANGE DISCHARGE GATE VALVE SUPPLIED BY HZI, DISCHARGE PIPE TO DEWATERING UNIT SUPPLIED BY HZIU.
3. INSULATION OF INOCULATION PIPE BY HZIU.

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
HYDRAULIC SYSTEM
ORGANIC WASTE SINGLE PUMP

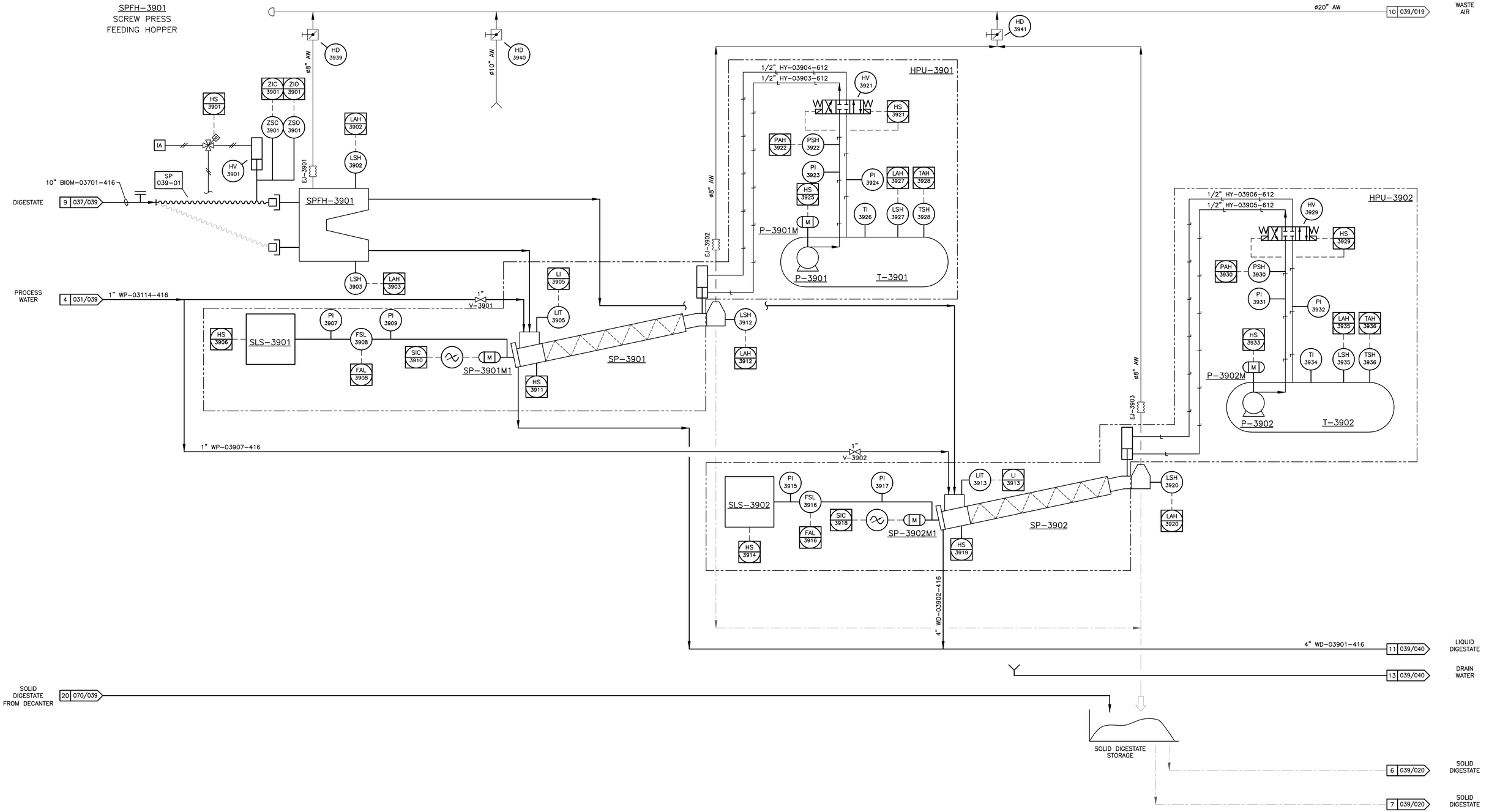
Hitachi Zosen INOVA

WEIGHT:	NA	SCALE:	NA
TOL UNO:	NA	SHEET	1 OF 1

DRAWING NUMBER Y-3321 I 312 038

REV A

SPFH–3901
SCREW PRESS
FEEDING HOPPER



SLS–3901
SCREW PRESS 1
LUBE SYSTEM

SP–3901
SCREW PRESS 1

SP–3901M1
SCREW PRESS 1
MOTOR 1

T–3901
SCREW PRESS 1
HYDRAULIC TANK

P–3901
SCREW PRESS 1
HYDRAULIC PUMP

P–3901M
SCREW PRESS 1
HYDRAULIC PUMP MOTOR

HPU–3901
SCREW PRESS 1
HYDRAULIC POWER UNIT

SLS–3902
SCREW PRESS 2
LUBE SYSTEM

SP–3902
SCREW PRESS 2

SP–3902M1
SCREW PRESS 2
MOTOR 1

T–3902
SCREW PRESS 2
HYDRAULIC TANK

P–3902
SCREW PRESS 2
HYDRAULIC PUMP

P–3902M
SCREW PRESS 2
HYDRAULIC PUMP MOTOR

HPU–3902
SCREW PRESS 2
HYDRAULIC POWER UNIT

REV	DATE	DESCRIPTION	BY	CHK
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Client/Project/Location
SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

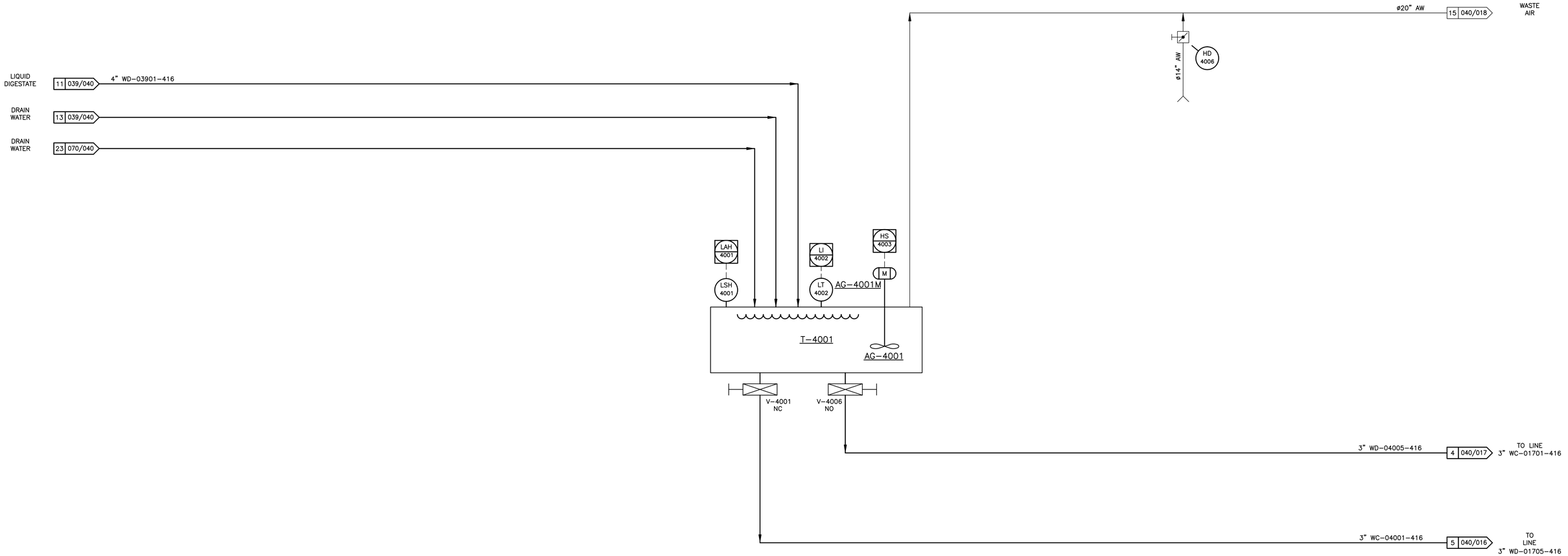
P & I DIAGRAM
SCREW PRESS
DIGESTER 2

Hitachi Zosen INOVA

WEIGHT:	NA	SCALE:	NA
TOL UNO:	NA	SHEET	1 OF 1

DRAWING NUMBER
Y–3321 I 312 039

REV
A



T-4001
LIQUID DIGESTATE
COLLECTING TANK

AG-4001
LIQUID DIGESTATE
AGITATOR

AG-4001M
LIQUID DIGESTATE
AGITATOR MOTOR

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

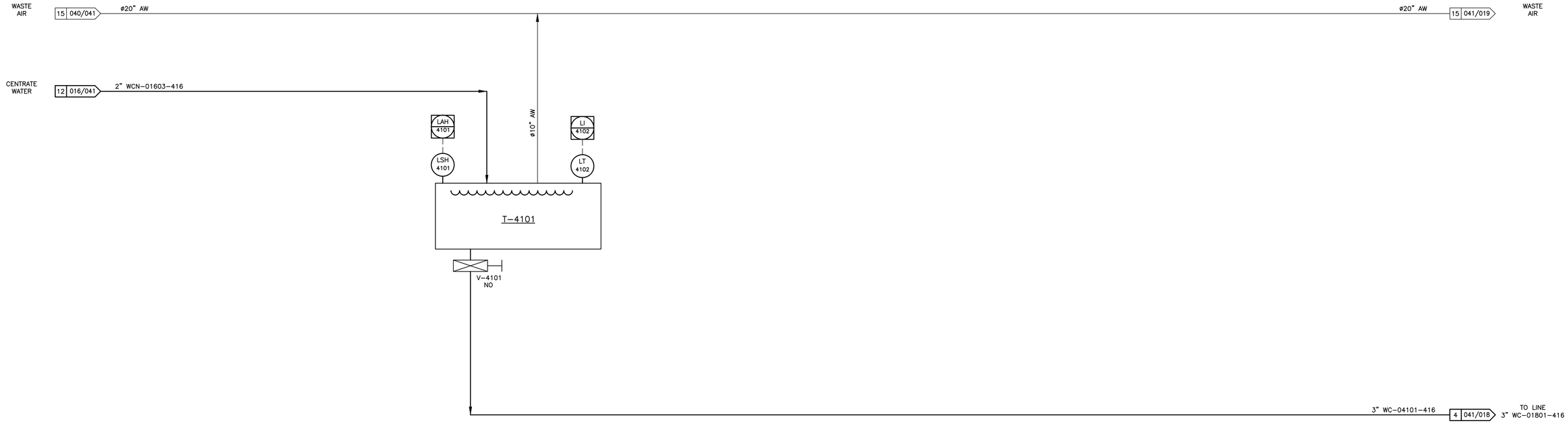
P & I DIAGRAM
LIQUID DIGESTATE
COLLECTING TANK/DIGESTER 2

Hitachi Zosen INOVA

WEIGHT:	NA	SCALE:	NA
TOL UNO:	NA	SHEET 1	OF 1

DRAWING NUMBER
Y-3321 I 312 040

REV
A



T-4101
CENTRATE TANK

NOTES:
1. SUPPLIED BY HZI IN CORE MODULE.

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

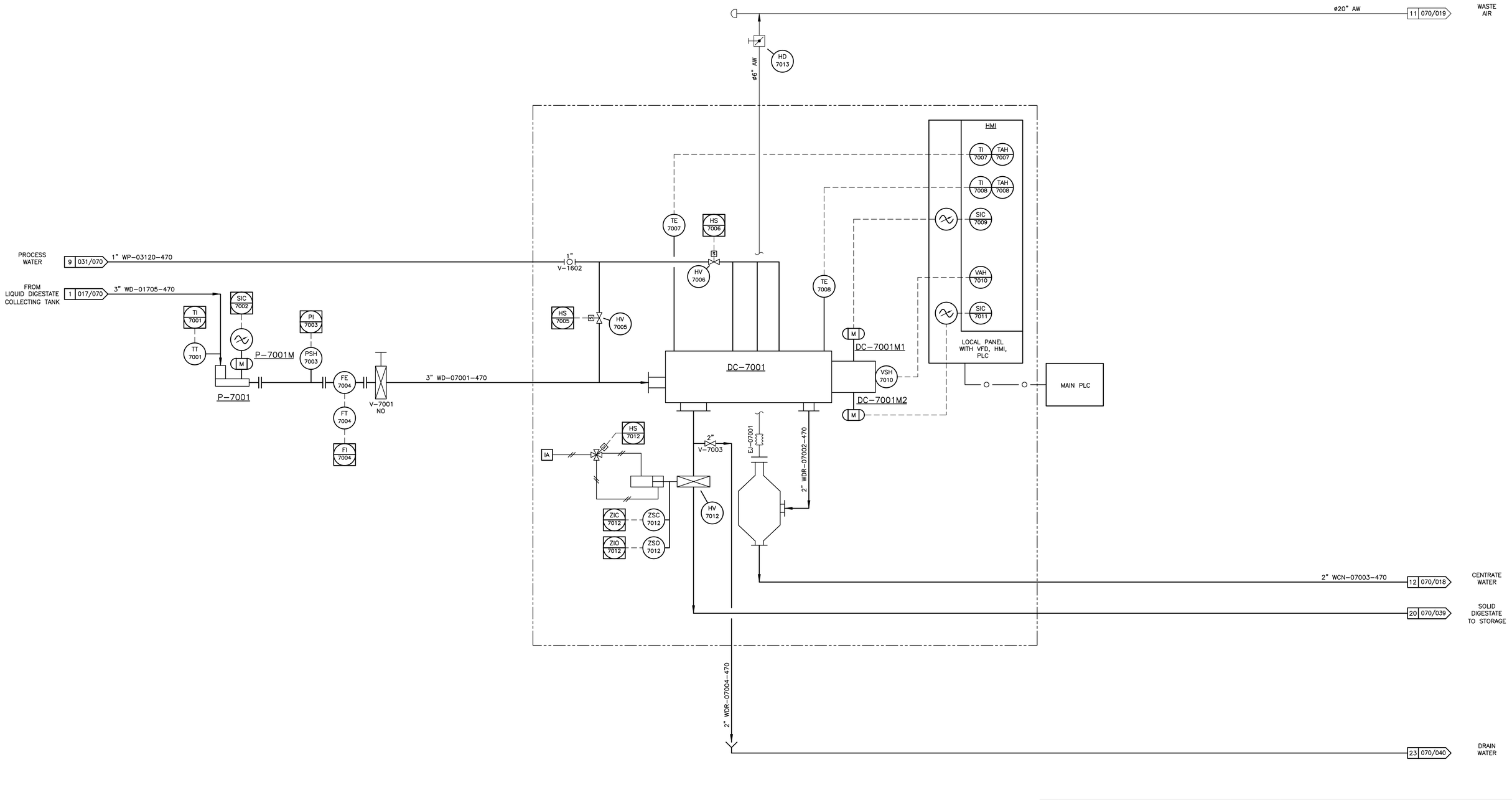
P & I DIAGRAM
CENTRATE TANK/DIGESTER 2

Hitachi Zosen INOVA

WEIGHT:	NA	SCALE:	NA
TOL UNO:	NA	SHEET 1	OF 1

DRAWING NUMBER
Y-3321 I 312 041

REV
A



P-7001
LIQUID DIGESTATE
PUMP
30 gpm
67.8 ft TDH

P-7001M
LIQUID DIGESTATE
PUMP MOTOR

DC-7001
DECANTER

DC-7001M1
DECANTER
BOWL MOTOR

DC-7001M2
DECANTER
SCROLL MOTOR

REV	DATE	DESCRIPTION	BY	CHK
A	6/30/17	PRELIMINARY	LAA	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	LAA	6/28/17
CHECKED	FEH	6/29/17
APPR'D	MB	6/30/17

P & I DIAGRAM
DECANTER 2

Hitachi Zosen INOVA

WEIGHT: NA | SCALE: NA
TOL UNO: NA | SHEET 1 OF 1

DRAWING NUMBER: Y-3321 I 312 070
REV: A

[redacted]

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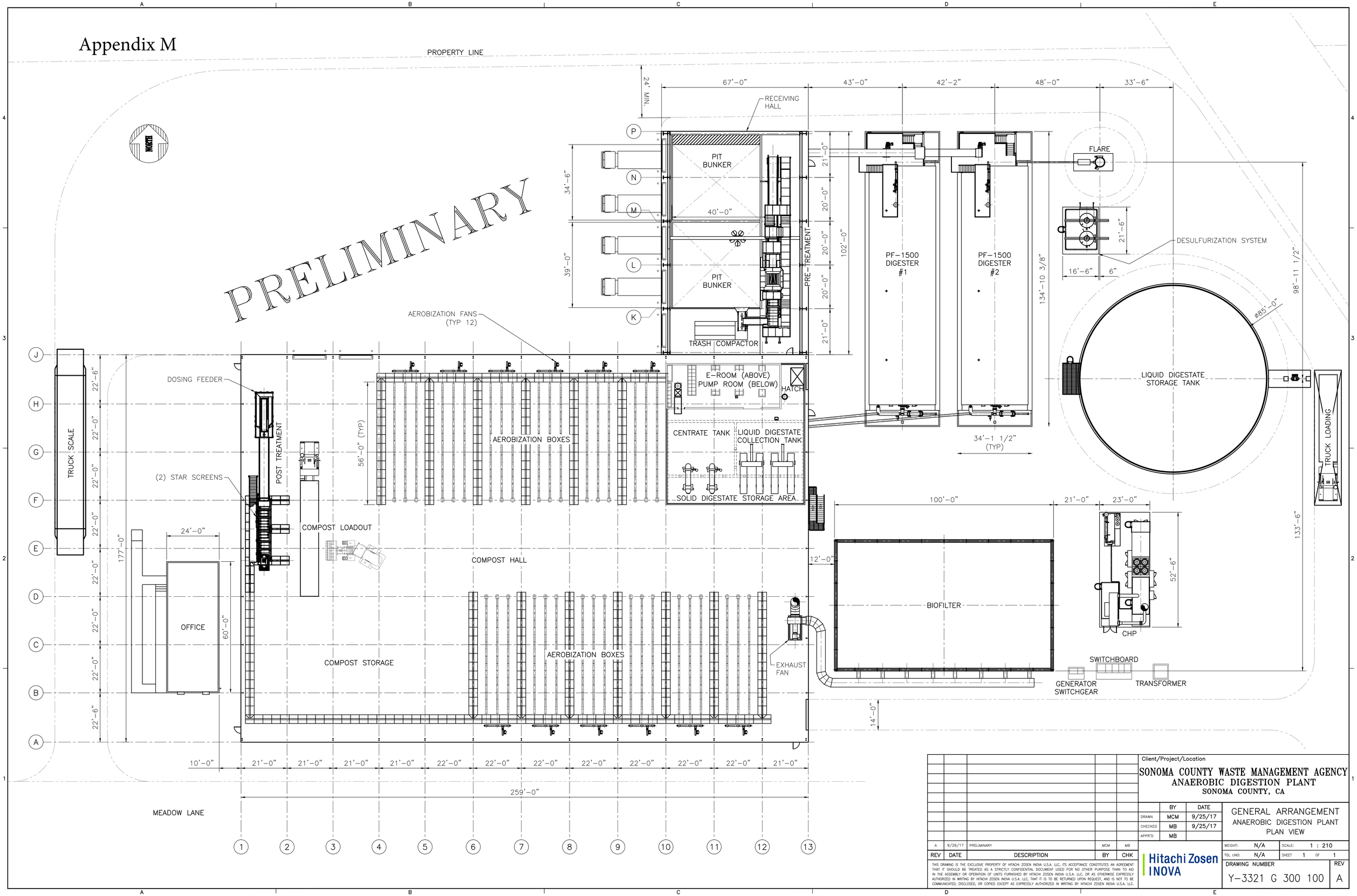
Appendix M



REV	DATE	DESCRIPTION	BY	CHK
A	9/26/17	PRELIMINARY	MCM	MB

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Client/Project/Location

SONOMA COUNTY WASTE MANAGEMENT AGENCY
ANAEROBIC DIGESTION PLANT
SONOMA COUNTY, CA

	BY	DATE
DRAWN	MCM	9/25/17
CHECKED	MB	9/25/17
APPR'D	MB	

GENERAL ARRANGEMENT
ANAEROBIC DIGESTION PLANT
PLAN VIEW

Hitachi Zosen INOVA

WEIGHT:	N/A
SCALE:	1 : 210
TOL UNO:	N/A
SHEET	1 OF 1

DRAWING NUMBER: Y–3321 G 300 100
REV: A

Hitachi Zosen INOVA

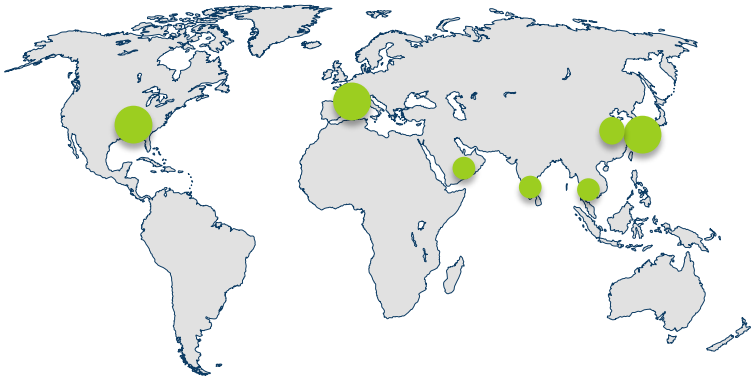
Appendix N

San Luis Obispo AD Project

Planning a 36,500 TPY Food and Green Waste AD Facility in California

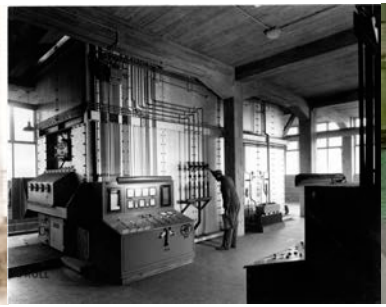
Hitachi Zosen Inova

Waste is our Energy

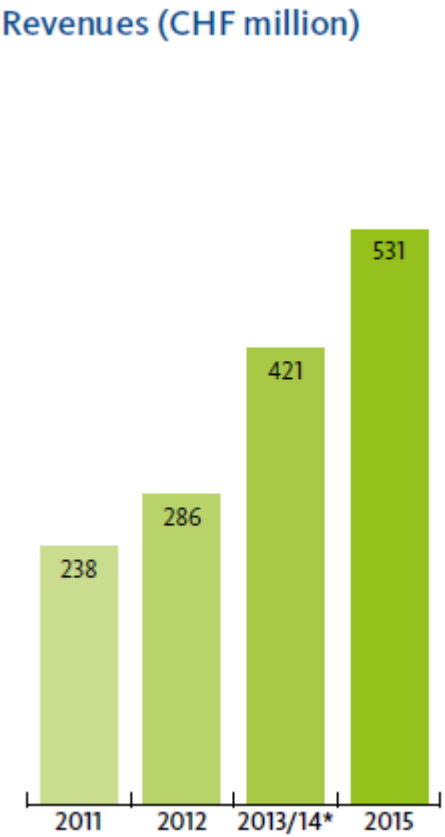


Hitachi Zosen Locations

- Proprietary EfW, AD, Nutrient Recovery & Biogas Upgrading technologies
- Complete turnkey plants and system solutions
- Operation, maintenance & service business
- 600+ employees in Switzerland, Germany, UK & USA
- More than 600 reference projects worldwide
  - > 500 thermal Energy from Waste plants
  - > 75 biological Energy from Waste plants
  - > 50 biogas-to-methane upgrading plants
- A Hitachi Zosen Corporation subsidiary

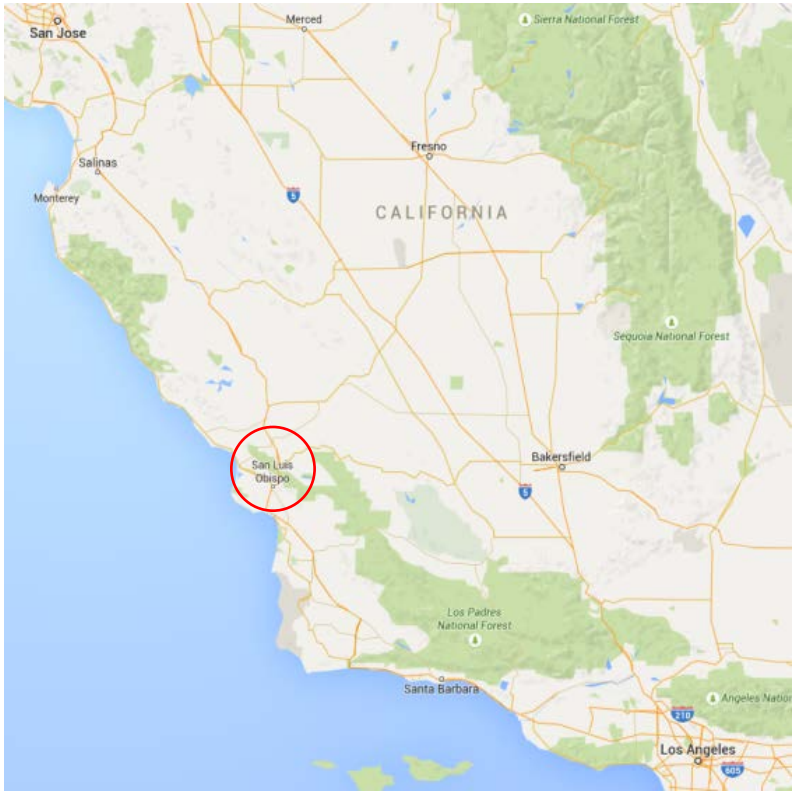

Legal Structure and Revenues Hitachi Zosen Inova AG



Project Background

Hitachi Zosen INOVA

San Luis Obispo (SLO) - AD Project

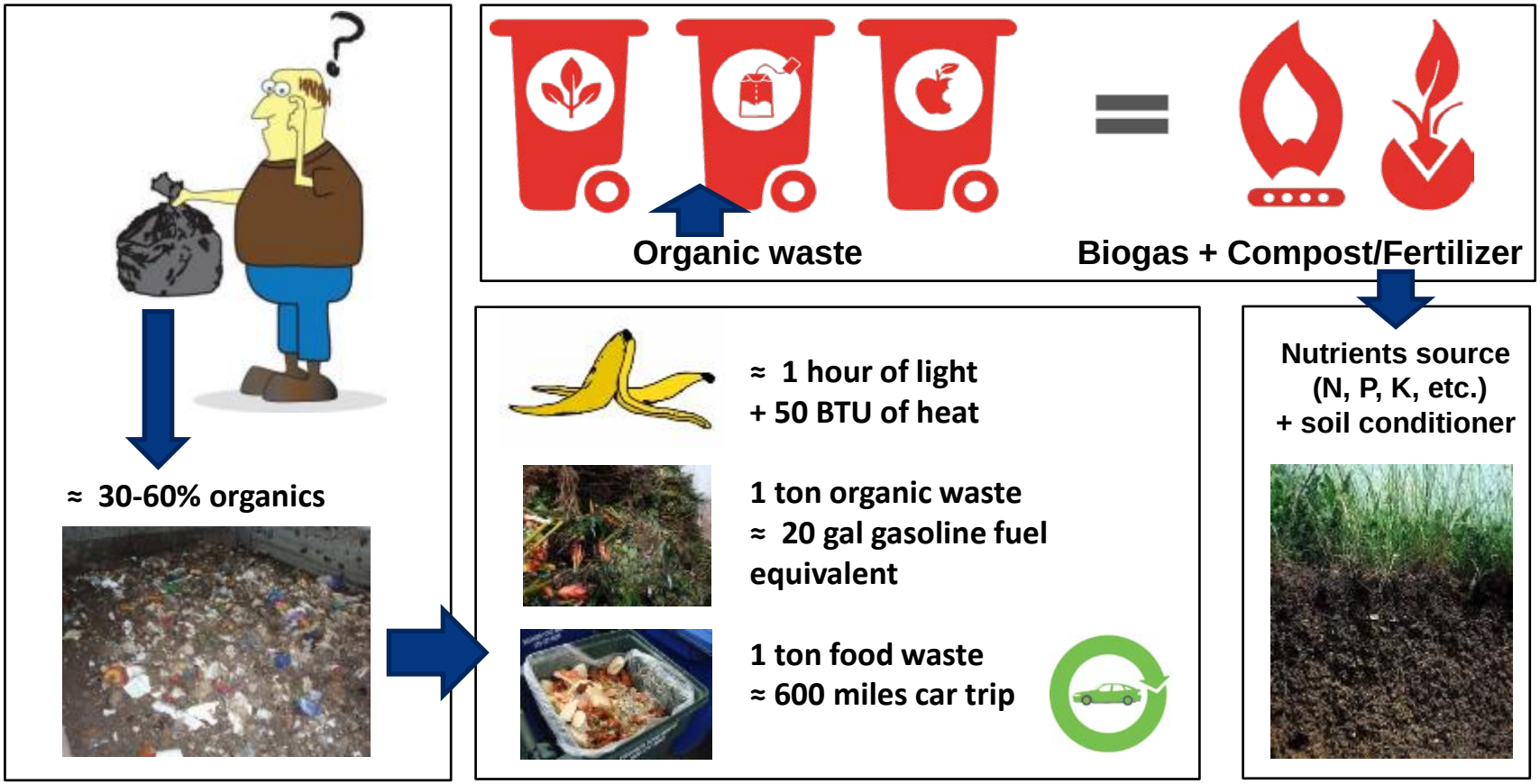


- SLO county needs to achieve 75% diversion goal (state goal by 2020)
- IWMA manager knows and prefers Kompogas
- Alternative is composting in neighboring counties (with rising compliance requirements in California for open composting)
- HZI is selected by WC to develop a FDBOO project

Strategic Partners

Project Driver

- Organics recycling with AD = closing the nutrient cycle while generating energy



Project Setup

- SLO has 27’000 t/year of yard waste (currently composted/ disposed) and want to include 9’500 t/a food waste in the future

- Waste Connections (WC) provides disposal services for San Luis Obispo City, County, and the surrounding 9 communities

- WC owns a site with office, workshops and truck parking which is foreseen and permitted for composting/ digestion operation

- SLO and the surrounding communities waste disposal agreement with WC is extended (20 years) based on AD investment (Plant)
  required to fulfill new CA 75% diversion rate requirements by 2020 (actual 68%)

- WC not interested in ‘technology projects’ – look for third party to finance-design-build-operate the Plant
  → waste supply and land lease contract with WC

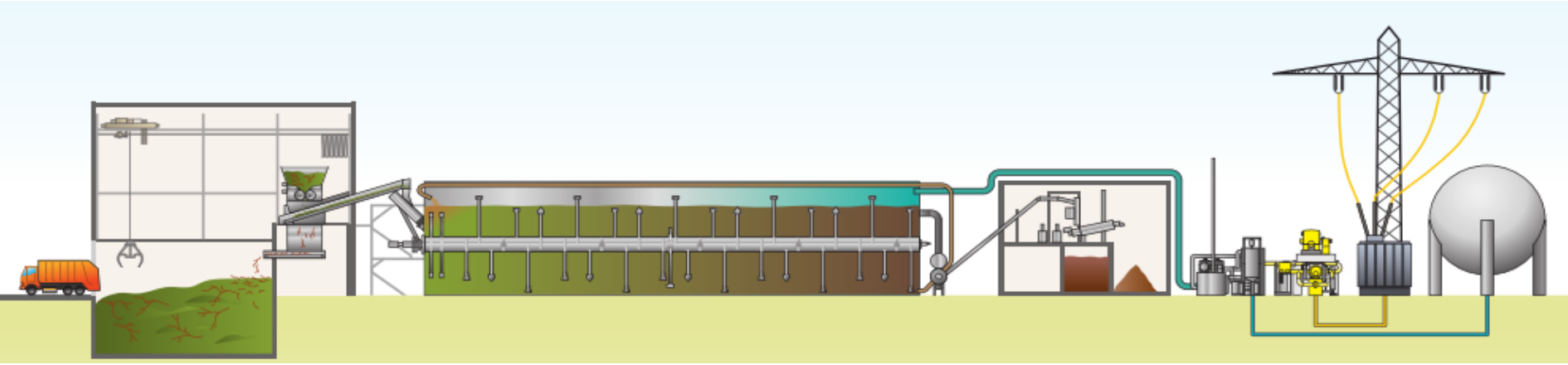
Hitachi Zosen INOVA

Key Data

Technology	• Kompogas HSAD System with CHP for power production
Project Type	• FDBOO (Finance, Design, Build, Own, Operate) • First Reference Plant in US
Project Cost	• Approx. US$ 20 MM with Power only concept • Financing through HZI and federal/state grants
Subsidy	• Grants: CalRecycle, **CEC EPIC**, CAEATFA) • ITC program (Investment Tax Credit)
EPC	• HZIU (expected project duration 15 months)
O&M	• HZIU Kompogas SLO Inc. (duration 20 years)
Customer	• Waste Connection with its Subsidiaries
Feedstock	• 36’500 t/a – WC is focusing to increase feedstock from 27’500 to 36’500
Property	• Owned by WC Subsidiary – leased by HZIU Kompogas SLO Inc. • Existing building modified to fit overall plant concept
Compost & Liquid Digestate Sales	• 10 $/t for compost • Usage of liquid digestate as soil amendment for local farming

Kompogas HSAD
First Class Technology combined with HZI Turn-Key Capability

Hitachi Zosen INOVA



Proprietary Technology from HZI

Engineered by HZI

Managed by HZI

Project, Site and Construction Management

Feeding System | **Digester** | **Discharge System** | **Dewatering** | **Gas Utilization**

Electrical, Instrumentation and Controls

Balance of Plant and Energy Utilization

Site and Building Services

Civil

Integrated Solution

Maximized Efficiency

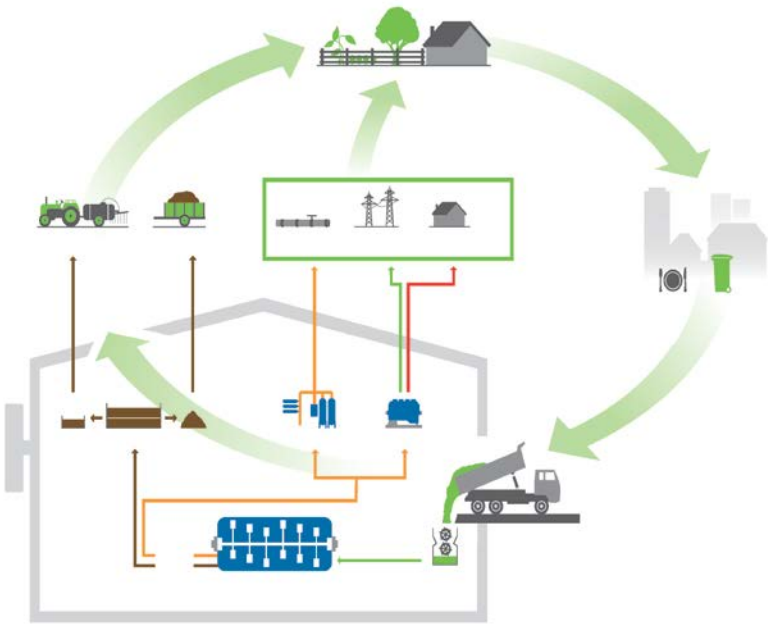
Reliable Execution

Avenues for Organics Recycling
Source Segregated Collection vs. Mechanical Separation of MSW

Hitachi Zosen INOVA

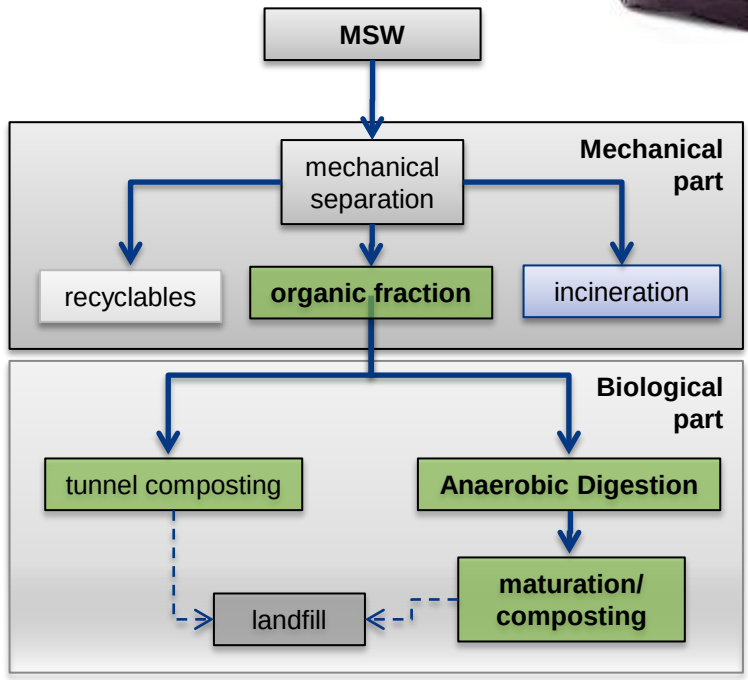
Avenue 1: SSO

Collection of source segregated organic waste and processing in a bio-waste Anaerobic Digestion plant



Avenue 2: OF MSW

Collection of MSW and separation of organics in a Mechanical-Biological Treatment (MBT) plant, incl. AD system



Kompogas Dry AD
Designed for a large variety of input materials

Hitachi Zosen INOVA

Green waste

Household bio-waste

Catering and kitchen waste

Organic fraction of MSW / residual waste

Market and vegetable waste

Expired food from supermarkets

Kompogas Dry AD
Designed for a large variety of input materials

Hitachi Zosen INOVA

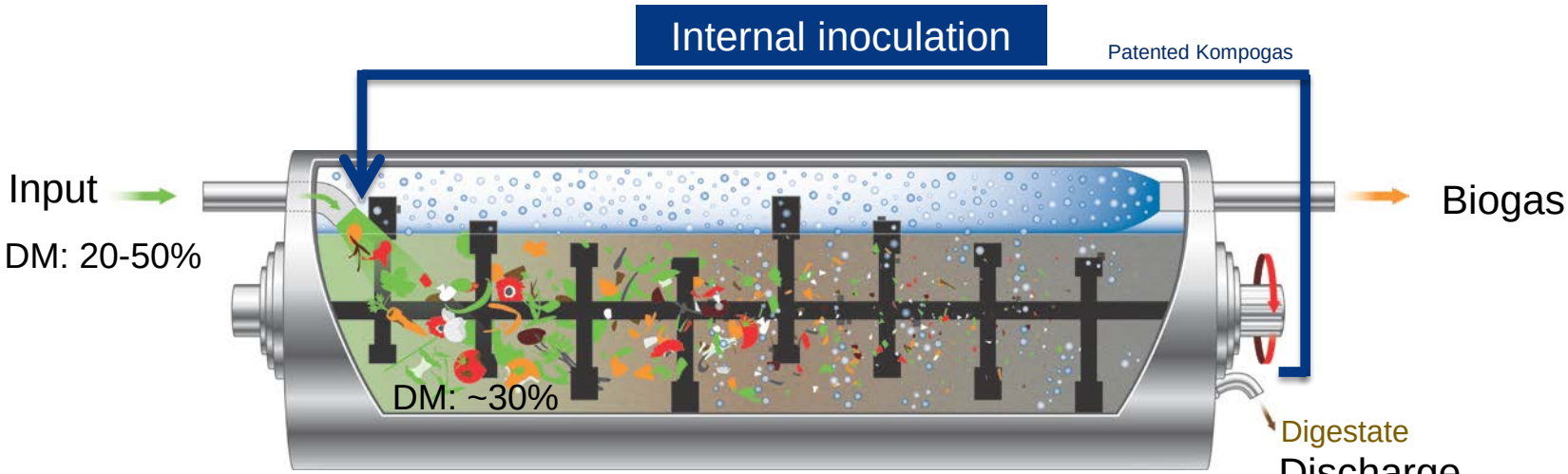




- Impurities: sand, gravel, stones, plastic bags, plastic foils, cans, ceramics, bottles, flower pots, glass, batteries, video tapes, hard plastics, CDs, electric devices, wooden boxes, metal pieces, garden tools, nails, cutlery, dead animals, lawn mowers, waste bins, etc.

Kompogas Dry AD
The Plug-Flow Advantage

Hitachi Zosen INOVA



Horizontal plug flow	Thermophile temperature 131° F	Longitudinal agitator	Internal inoculation
- Optimal digestion -	- Biological activity -	- Energy saving & tight -	-Stable & quick process -

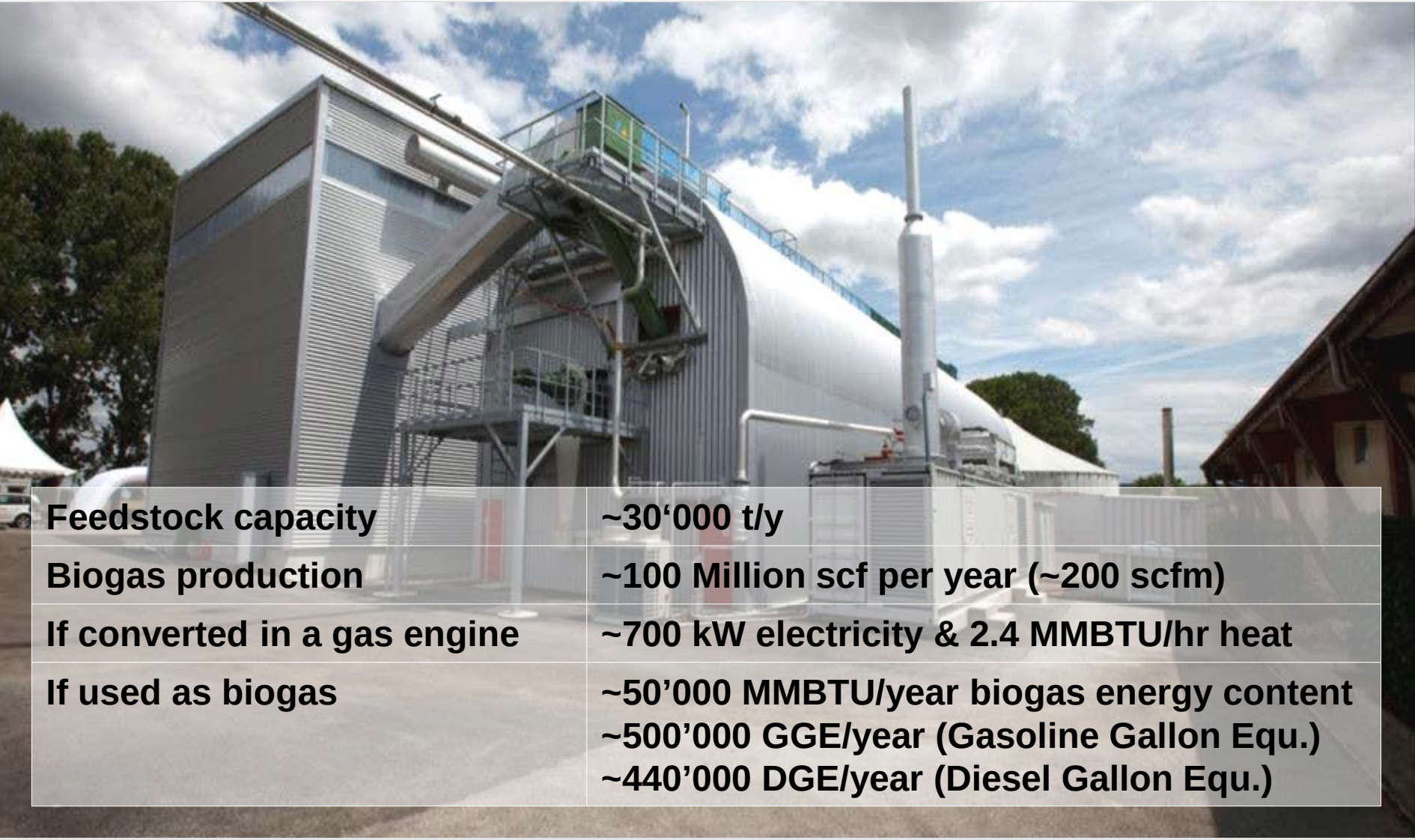
- Retention time 14 days @ 131° F → sanitized fertilizer products
- Inoculation allows fastest process start, defined & specialized process conditions allow highest conversion efficiency → highest biogas production and quality

Kompogas steel digester
Robust and reliable, available in various sizes

Hitachi Zosen INOVA

- Digester sizes: PF1200, PF1500, PF1800, further sizes on request
- Modular design for fast installation
- High and constant biogas yield from anaerobic degradable inputs
- Continuous process and stable biology
- Safe and emissions-free

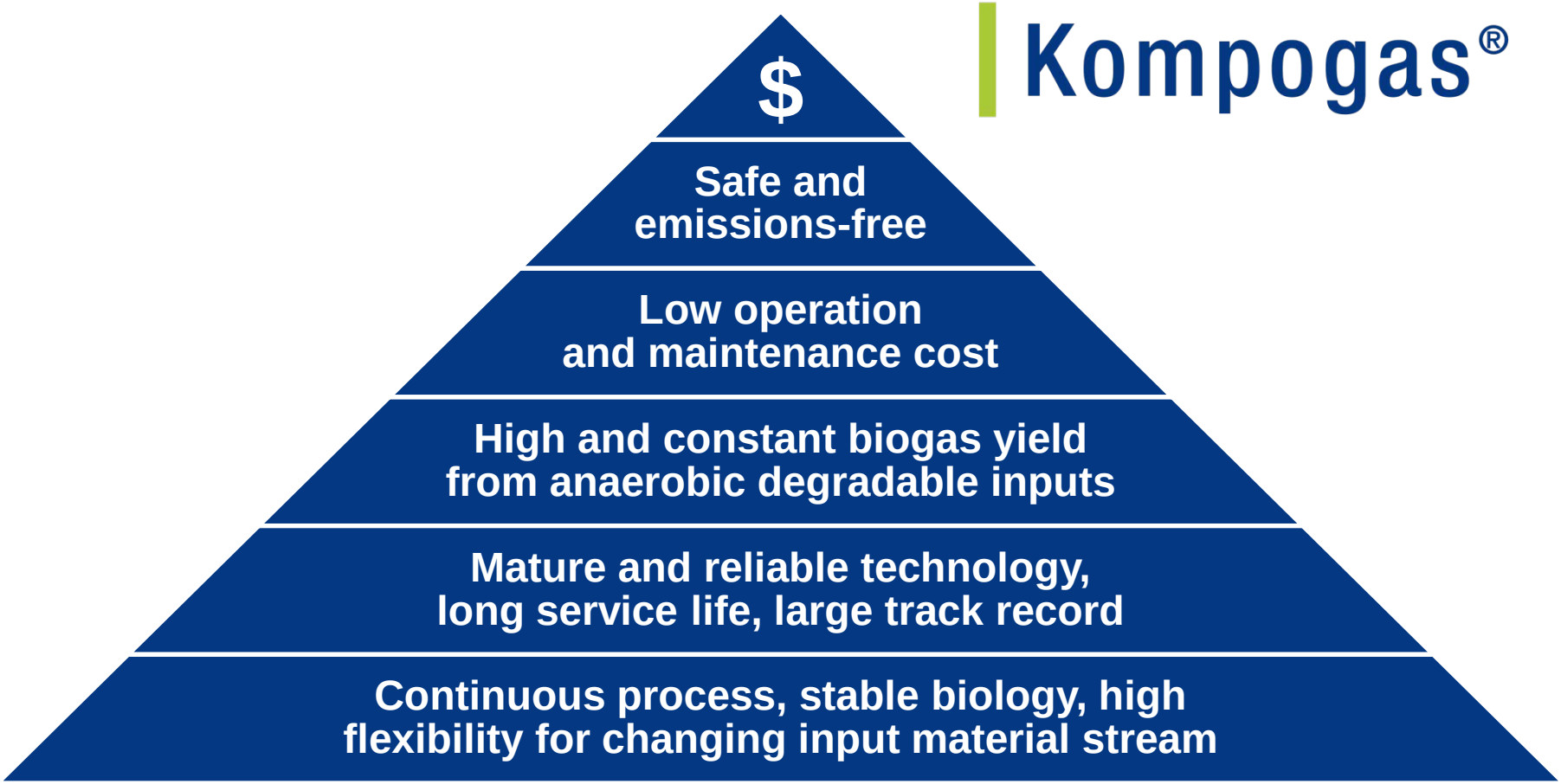
Steel digester PF1500



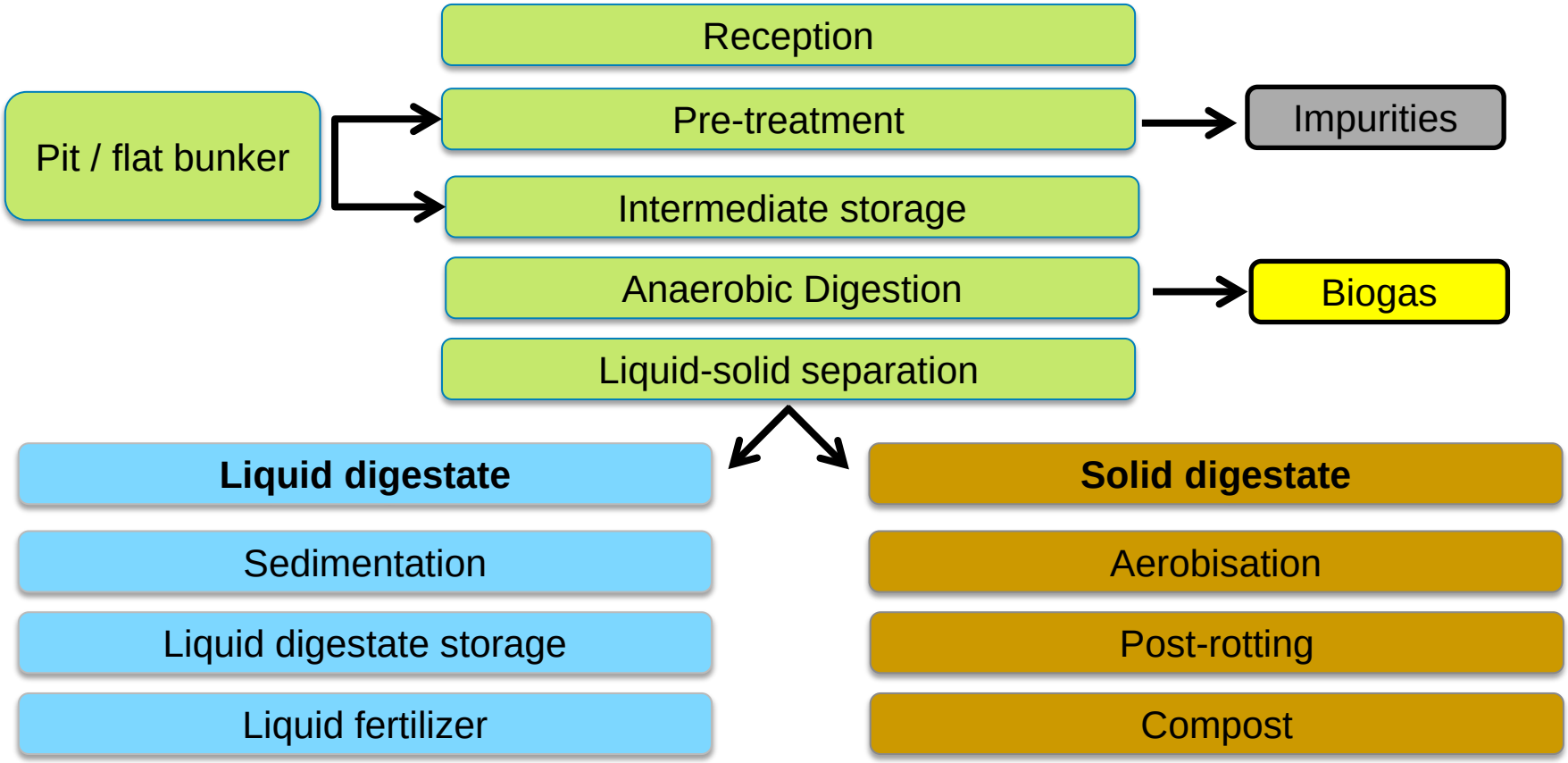
Feedstock capacity	**~30‘000 t/y**
Biogas production	**~100 Million scf per year (~200 scfm)**
If converted in a gas engine	**~700 kW electricity & 2.4 MMBTU/hr heat**
If used as biogas	**~50’000 MMBTU/year biogas energy content ~500’000 GGE/year (Gasoline Gallon Equ.) ~440’000 DGE/year (Diesel Gallon Equ.)**

What is needed to be profitable?

Kompogas®



Kompogas process – Full stream



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Technology – Reception

Technology – Pre-treatment

Technology – Intermediate storage & digester feeding

Technology – Kompogas digester

Length	**33.8 m**
Diameter	**8.5 m**
Nominal volume	**1500 m^3**

Technology – Extraction & liquid-solid separation

Technology – Liquid-solid separation & liquid storage

Technology – Liquid-solid separation & aerobization

Selected references of >75 Kompogas plants in operation worldwide

Hitachi Zosen INOVA

The First

Rümlang (CH)
built 1991

The Most Ecological

Rijsenhout (NL)
Recovering CH_4 and CO_2 for greenhouses

The Largest

Doha (Qatar)
15 digesters
for 301’400 t/y
(OFMSW & SSO)

The Compact

Winterthur (CH)
PF1500 steel digester & biogas upgrading

Lessons learned - 1

- Modified Use Permit (MUP) was expected to be available for existing site and buildings, however during investigations it turned out that it was not valid for AD projects.
- Conditional Use Permit (CUP) to be applied instead. Positive aspect is that the project size can now be expanded.
- Importance of working with local professionals (consultants, lawyers, engineers) in regards to all permitting activities
- Grant applications are a long and tedious process and some times depended on political schedule and climate
- Availability of grants has significant influence on economics of project

Lessons learned - 2

- Investigated different business cases:
  - CHP for electrical power
  - CHP and Upgrading for Gas Grid Injection
  - CHP and Upgrading for CNG
  - Upgrading for Gas Grid Injection
  - Upgrading for CNG
  - Upgrading for Gas Grid Injection and CNG

- In initial planning stages CNG option with HZIU own Upgrading technology presented itself as most economical solution. Due to extension of time frame for safe harboring of the ITC, the power only option has a significantly higher potential for return of investment.
- HZIU invested upfront time in a complete North Americanization of its technology, making it ready for the US market with parts and service easily available locally.

Lessons learned - 3

- Permitting requires significantly higher engineering effort than comparable projects in other areas in the US, Canada and Europe. The biggest issue was seismic conditions for California, it adds significant costs.

- CEQA (California Environmental Quality Act) Approval takes at a minimum 6 to 8 months by the time all appeal processes have been satisfied (great project, but not in my backyard)

- Liquid Digestate Offtake
  - Project economics depend on liquid digestate not being a liability.
  - Concerns are solids content, odor and low nutrient levels
  - Off-taker identified to take digestate free of charge

- Air permit has taken a bit of time to obtain. It only pertains to the CHP and Flare units but it has taken more than expected.

Waste is our Energy

Waste is our Energy.

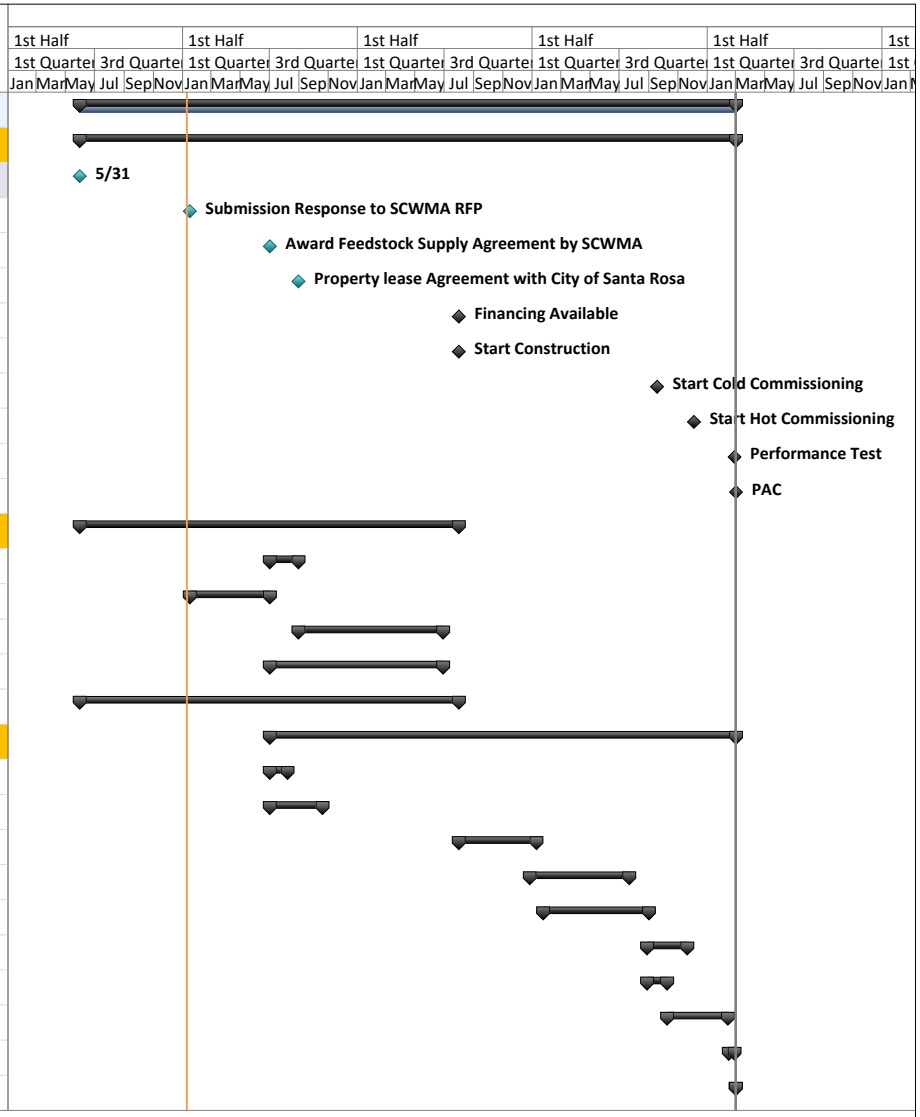
Engineering is our Business.

Hitachi Zosen
INOVA

Sustainable Solutions are our Mission.

Appendix O

ID	Task Mode	Task Name	Duration	Predecessors	Start	Finish
1		**Sonoma County**	**979 days**		**Wed 5/31/17**	**Mon 3/1/21**
2		**Milestones**	**979 days**		**Wed 5/31/17**	**Mon 3/1/21**
3		RFP Released	0 days		Wed 5/31/17	Wed 5/31/17
4		Submission Response to SCWMA RFP	0 days		Tue 1/16/18	Tue 1/16/18
5		Award Feedstock Supply Agreement by SCWMA	0 days	19SS	Mon 7/2/18	Mon 7/2/18
6		Property lease Agreement with City of Santa Rosa	0 days	16SS	Fri 8/31/18	Fri 8/31/18
7		Financing Available	0 days	64	Wed 7/31/19	Wed 7/31/19
8		Start Construction	0 days	74SS	Thu 8/1/19	Thu 8/1/19
9		Start Cold Commissioning	0 days	171	Thu 9/17/20	Thu 9/17/20
10		Start Hot Commissioning	0 days	176	Thu 12/3/20	Thu 12/3/20
11		Performance Test	0 days	179	Fri 2/26/21	Fri 2/26/21
12		PAC	0 days	181	Mon 3/1/21	Mon 3/1/21
13		**Project Development**	**566 days**		**Wed 5/31/17**	**Wed 7/31/19**
14		**Property Owner Interface**	**44 days**		**Mon 7/2/18**	**Fri 8/31/18**
17		**Customer/Feedstock Owner Interface**	**119 days**		**Tue 1/16/18**	**Mon 7/2/18**
20		**Purchase Power Agreement**	**216 days**		**Fri 8/31/18**	**Fri 6/28/19**
36		**Permitting**	**260 days**		**Mon 7/2/18**	**Fri 6/28/19**
60		Financial Closure	566 days		Wed 5/31/17	Wed 7/31/19
65		**Project Execution**	**696 days**		**Mon 7/2/18**	**Mon 3/1/21**
66		**Process Eng.**	**27 days**		**Mon 7/2/18**	**Tue 8/7/18**
70		**Design & Civil Eng.**	**80 days**		**Mon 7/2/18**	**Fri 10/19/18**
73		**Civil - Substructure**	**116 days**		**Thu 8/1/19**	**Thu 1/9/20**
93		**Civil - Building**	**148 days**		**Fri 12/27/19**	**Tue 7/21/20**
110		**Electromechanic phase**	**157 days**		**Fri 1/24/20**	**Mon 8/31/20**
168		**Training**	**60 days**		**Fri 8/28/20**	**Thu 11/19/20**
170		**Cold Commissioning**	**30 days**		**Fri 8/28/20**	**Thu 10/8/20**
175		**Hot Commissioning**	**91 days**		**Fri 10/9/20**	**Fri 2/12/21**
178		**Performance Test**	**10 days**		**Mon 2/15/21**	**Fri 2/26/21**
180		**PAC**	**1 day**		**Mon 3/1/21**	**Mon 3/1/21**



Project: Sonoma County_TTS_Rev
Date: Wed 1/10/18

Task	External Tasks	Manual Task	Finish-only
Split	External Milestone	Duration-only	Deadline
Milestone	Inactive Task	Manual Summary Rollup	Progress
Summary	Inactive Milestone	Manual Summary	
Project Summary	Inactive Summary	Start-only	

Appendix P

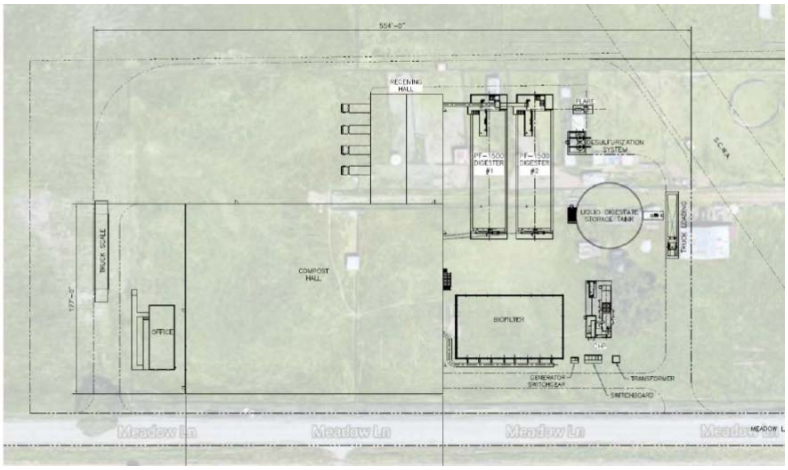
Technical Memorandum

January 8, 2018

To:	William Skinner, Sean Honegger	Ref. No.:	10047907
From:	Christopher D. Trumbull, P.E., G.E., D.GE	Tel:	530-387-5683

Subject: Geotechnical Feasibility Study, Organic Processing Facility, Santa Rosa, CA

GHD Inc (GHD) is pleased to present this memorandum for proposed organic processing facility on Meadow Lane in Santa Rosa, California. It is our understanding that the project includes the following concepts, as shown below: Truck Scale, Office, Compost Hall, Receiving Hall including pit bunkers, two Digesters, a Biofilter, a storage tank, other smaller treatment pieces, paved access ways, and appurtenant underground utilities.



The scope of work includes be a feasibility-level geotechnical desktop study, which is intended to be used for planning purposes and not design.

1. Geotechnical Information

Geotechnical information was gathered from many public sources in addition to in-house geotechnical data.

1.1 Geology

The site is located in the Santa Rosa Valley within the Coast Range geomorphic province, about midway between Sebastopol and Rohnert Park, California. The province is generally characterized by northwest-trending mountains and valleys, which is a result of the northwest structural trend of the bedrock. The Santa Rosa Valley is largely infilled with Quaternary-aged (Pleistocene to Holocene) alluvial deposits, which consist of clay and silt with some sand and gravel.

GHD
4080 Plaza Goldorado Circle Suite B Cameron Park California 95682 USA
T 530 677 5515 **W** www.ghd.com

1.2 Subsurface Conditions

Based on subsurface information from a nearby project, the site is likely underlain by soft clay, which can be compressible when subject to structure loading. In addition, the clay can have a moderate to high expansion potential, can be unstable under heavy loading, and can be mildly corrosive to ferrous metals and typical concrete. A very slow infiltration rate should be expected. Once below 20 to 30 feet, the clay can be underlain by other alluvial deposits, such as silt, sand, and gravel.

1.3 Groundwater

Groundwater should be expected in the range of 5 to 10 feet below the existing ground surface.

1.4 Faulting and Seismicity

The nearest active fault is the Rodgers Creek fault, which is about six miles northeast of the site, which is capable of an earthquake magnitude of 7.25. The site is not within an Alquist-Priolo Earthquake Fault Zone. Since the United States Geologic Survey (USGS) identifies a peak ground acceleration of 0.51g for design, strong ground shaking should be expected at the site.

1.5 Geologic Hazards

No fault offset, volcanic activity, earthquake-induced landslides, tsunamis, or seiches should be expected at the site, but the USGS has mapped areas nearby the site as having a high liquefaction potential.

1.6 Floodplains

The site is not in a FEMA Designated Special Flood Hazard Area. However, it is mapped within Zone X, which has a 0.2% annual chance of flood.

1.7 Major Aquifer Recharge Areas

The State of California, Department of Water Resources has not identified the site, or surrounding vicinity, as a Recharge Protection Area.

2. Feasibility-Level Conclusions and Recommendations

Based on the available information, the following feasibility-level conclusions and recommendations are offered for planning purposes only.

2.1 Geologic Hazards

Strong ground shaking should be expected in the lifetime of the facility and the design of the facility should include seismic design in accordance with the latest California Building Code. The site could be underlain by sand and high groundwater table, resulting in a high potential for liquefaction during earthquake shanking. A site-specific liquefaction evaluation should be performed to quantify the risk and consequences associated with liquefaction. If the site is underlain by liquefiable deposits, surficial settlement could occur and deep foundation may be required to provide structural support.

2.2 Foundation Support

The site is likely underlain by soft and compressible soil, which could provide marginal foundation support. Medium- to heavily-loaded structures, such as the digesters and storage tank, may require a deep foundation system, such as driven concrete piles, to minimize settlement of the structures. Lightly-loaded structures (other than digesters and tank) will likely derived support from typical shallow foundations, such as spread footing or mat foundations.

2.3 Unstable Soil

The site is likely underlain by expansive clay, which could raise vertically during wetting and shrink during drying. This could impact shallow foundations, flatwork, and pavements; special provisions, such as reinforcement, use of non-expansive fill, and chemical treatment may be required for mitigation.

2.4 Corrosive Soil

The clay can be corrosive and should be confirmed. If corrosive, it could require the use of special cement, such as Type V, in concrete and protection of buried ferrous metal pipelines or structures.

2.5 Permeable Strata and Soils

The permeable strata is expected to be at depths greater than 20 feet below existing ground surface.

2.6 Groundwater

Since the groundwater could be as shallow as 5 feet, excavations deeper than 5 feet may require dewatering.

2.7 Additional Study

The information contained herein is not site-specific and should not be used for design. Once the project is defined, a geotechnical investigation should be performed on the project site to obtain pertinent site-specific geotechnical information that can be evaluated for specific project features, geometry, and loading to develop conclusions and design-level recommendations.

3. Closing

If you have any questions regarding the information contained in this memorandum, or if we may be of further assistance, please do not hesitate to contact us.

Respectfully submitted,

Christopher D. Trumbull, P.E., G.E., D.GE
Senior Geotechnical Engineer

LETTER OF INTENT

This Letter of Intent ("LOI") is entered into the 18th of December 2017 by and between **Hitachi Zosen Inova, USA LLC** with its principal place of business at 3740 Davinci Court, Suite 250, Norcorss GA, 30092 ("HZI") and **Noah Small, dba Pacific Orgainics**, with its principal place of busisness located in Creston, CA ("Pacific") (hereinafter collectively referred to as the "Parties").

WHEREAS, the Parties desire to enter into a business relationship wherein they will collaborate on the sale and distribuition of compost and compost tea (Liquid digestate) generated from the proposed Anaerobic Digestion Facility to be located in Santa Rosa, CA and;

WHEREAS, in order for Pacific to resell the items noted above, HZI must meet certain and definable criteria for the compostion of the Compost and Compost tea,

NOW, THEREFORE for valuable consideration, the Parties agree as follows:

1. SCOPE OF WORK

HZI will agree to furnish to Pacific all of the Compost generated at the proposed project. HZI will be responsible for loading trucks at a predetermined schedule as supplied by Pacific. HZI will work to ensure the moisture content of the Compost does not exceed 45% as tested using standard testing methodology, and that the Compost will be certified through the Organics Materials Review Institute (OMRI) and that we will follow the guidelines as set forth by the U.S. Composting Council for their testing known as Seal of Testing Assurance (STA), both of which will help to ensure the quality of the Compost. Additionally, HZI will at their own expense, provide testing results from a qualified compost testing lab in accordance with the permit requirements of the proposed project.

HZI will also agree to furnish to Pacific all of the compost tea (digestate) that is generated from the proposed project. Pacific will agree to remove the compost tea at their cost from the HSAD at intervals to be determined. HZI will provide testing results through a qualified compost testing lab that will specify the constituents and NPK value of the compost tea. HZI will work to reduce or remove the suspended solids in the compost tea in order to make the product more marketable. In lieu of removing the suspended solids, HZI will explore the possibility of purchasing a tank trailer to be used by Pacific for the hauling and reuse of the digestate.

2. TERM OF AGREEMENT

Upon the commissioning and start up of the proposed project, anticipated to be Q1, 2021, the Parties will enter into a formal agreement for the reselling and removal of the compost and compost tea. It is anticipated that HZI will commit to furnishing and Pacific will agree to accept the products noted above for an initial period of not less than two (2) years.

This LOI contains the entire agreement and understanding between the Parties, their agents, and employees as to the subject matter hereof and supersedes in its entirety any and all previous or contemporary communications (whether written or oral) between the parties regarding the subject herein. No amendment, change, or modification of this LOI shall be valid or of any effect except if the same is in writing and executed by a duly authorized representative of each party.

Please indicate acceptance of this letter by signing and returning one copy to me. This letter may be executed in counterparts, each of which shall be an original and all of which constitute but one and the same instrument.

8. **BINDING AGREEMENT**

Other than this paragraph 8, which is intended to be and is legally binding, this LOI is nonbinding and constitutes an indication of intent only and creates no liability or obligation of any nature whatsoever among the parties hereto with respect to any contemplated transaction or any other matter or action described or referred to herein. Legally binding obligations with respect to the contemplated transaction will only arise upon execution of a definitive agreement and related agreements with respect to the transaction.

Sincerely,

William Skinner
Hitachi Zosen Inova, USA LLC

Pacific Organics

By: Noah Small
Noah Small

Hitachi Zosen Inova, USA LLC

By: _____
Mike Canova, Treasurer

SAN LUIS OBISPO COUNTY
DEPARTMENT OF PLANNING AND BUILDING

August 30, 2016

Hitachi Zosen Inova USA, LLC
3740 Davinci Court, Ste. 250
Norcross, GA 30092

Carol Florence
c/o Oasis Associates
3247 Miguelito Court
San Luis Obispo, CA 93401

NOTICE OF FINAL COUNTY ACTION

SUBJECT: HITACHI ZOSEN INOVA USA, LLC
COUNTY FILE NUMBER: DRC2015-00122

At the meeting of November 8, 2012, the County Planning Commission approved your application and adopted an official resolution. A copy of this resolution is enclosed for your records. The approved Findings, shown in Exhibit A, and the Conditions, shown in Exhibit B, are attached to the resolution. The conditions of approval must be carried out as set forth therein.

If you disagree with this action, pursuant to County Land Use Ordinance Section 22.70.050, you have the right to appeal this decision to the Board of Supervisors up to 14 calendar days after the date of the action, in writing on the proper department appeal form, to the Department of Planning and Building. The appeal fee is $850.00 and must accompany your appeal form. We will only accept the original appeal form with an original signature; a FAX will not be accepted.

If you have any questions regarding this matter, please contact me at (805) 781-5612.

Sincerely,

Ramona Hedges
Secretary, Planning Commission

FINDINGS - EXHIBIT A (REVISED 8/25/16)
HITACHI ZOSEN INOVA USA, LLC – DRC2015-00122

Environmental Determination

A. The Environmental Coordinator, after completion of the initial study, finds that there is no substantial evidence that the project may have a significant effect on the environment, and the preparation of an Environmental Impact Report is not necessary. Therefore, a Negative Declaration (pursuant to Public Resources Code Section 21000 et seq., and CA Code of Regulations Section 15000 et seq.) has been issued on July 21, 2016 for this project. Mitigation measures are proposed to address Air Quality, Geology and Soils, Hazards/Hazardous Materials, Transportation/Circulation, and Water/Hydrology and are included as conditions of approval. Anyone interested in commenting or receiving a copy of the proposed Environmental Determination should submit a written statement. Comments will be accepted up until completion of the public hearing(s).

Conditional Use Permit

B. The proposed project or use is consistent with the San Luis Obispo County General Plan because Commercial Composting (Ag Processing) is an allowed use and as conditioned is consistent with all of the General Plan policies.

C. As conditioned, the proposed project or use satisfies all applicable provisions of Title 22 of the County Code.

D. The establishment and subsequent operation or conduct of the use will not, because of the circumstances and conditions applied in the particular case, be detrimental to the health, safety or welfare of the general public or persons residing or working in the neighborhood of the use, or be detrimental or injurious to property or improvements in the vicinity of the use because the anaerobic digester plant does not generate activity that presents a potential threat to the surrounding property and buildings. This project is subject to Ordinance and Building Code requirements designed to address health, safety and welfare concerns.

E. The proposed project or use will not be inconsistent with the character of the immediate neighborhood or contrary to its orderly development because the anaerobic digester is similar to, and will not conflict with, the surrounding lands and uses.

F. The proposed project or use will not generate a volume of traffic beyond the safe capacity of all roads providing access to the project, either existing or to be improved with the project because the project is located on Santa Fe Road, a local road constructed to a level able to handle any additional traffic associated with the project.

Article 4 Exception

G. Modification of Land Use Ordinance Section 22.30.070.D.3.c. to allow setbacks less than 200 feet from the left and rear property lines is justified because specific conditions of the site make the standard unnecessary. The location of an existing drainage channel (east-west) through the middle of the site and the current location of the existing building proposed to be utilized for this project make it impractical to locate the plant 200 feet from all property lines. Additionally, the rear property line abuts a vacant/undeveloped County-owned parcel that is utilized as a drainage detention basin for the airport, and the left property line neighbors two Industrial properties, making it unnecessary to be located 200 feet from the property line.

EXHIBIT B - CONDITIONS OF APPROVAL (REVISED 8/25/16)
HITACHI ZOSEN INOVA USA, LLC – DRC2015-00122

Approved Development

1. This approval authorizes

   a. construction and operation of an anaerobic digestion plant (ADP) to process green and food waste from the Waste Connections service area. The project will include the remodel of an existing 13,128 square-foot (sf) warehouse building and construction of a 36,000 sf addition. Other improvements will include a new office trailer, 80-space parking lot, vehicle weighbridge, 5,000 sf digester, 3,500 sf presswater tank, 7,500 sf biofilter, 1,062 kW combined heat and power (CHP) unit with flare, site grading, and stormwater facilities. The project will result in the disturbance of approximately 4.8 acres on two parcels totaling 12.53 acres.

   b. modification to the 200 foot setback requirement for structures to left side and rear property lines to allow a 37 foot left side setback, and a 173 foot rear setback.

   c. maximum height is 45 feet from average natural grade.

Conditions required to be completed at the time of application for construction permits

Site Development

2. **At the time of application for construction permits** plans submitted shall show all development consistent with the approved site plan, floor plan, and architectural elevations.

3. **At the time of application for construction permits,** the applicant shall provide details on any proposed signs. The number and area of signs allowed shall comply with Section 22.20.060 of the Land Use Ordinance. Freestanding signs shall be monument signs under six feet in height.

Fire Safety

4. **At the time of application for construction permits,** all plans submitted to the Department of Planning and Building shall meet the fire and life safety requirements of the California Fire Code. Requirements shall include, but not be limited to those outlined in the Fire Safety Plan, prepared by the Cal Fire/County Fire Department for this proposed project.

Services

5. **At the time of application for construction permits**, the applicant shall submit evidence that there is adequate water to serve the proposal, on the site.

6. **At the time of application for construction permits**, the applicant shall submit evidence that a septic system, adequate to serve the proposal, can be installed on the site.

Access

7. **At the time of application for construction permits**, the applicant shall provide evidence to the Department of Planning and Building that onsite circulation and pavement structural sections have been designed and shall be constructed in conformance with Cal Fire standards and specifications back to the nearest public maintained roadway.

8. **At the time of application for construction permits**, and in accordance with Streets and Highway Code Section 1480.5 & 1481 the applicant shall submit an application to the Department of Public Works for an Encroachment Permit to reconstruct, if necessary, all deteriorated or non-compliant parent parcel frontage improvements.

Drainage

9. **At the time of application for construction permits**, the applicant shall submit complete drainage plans and report prepared by a licensed civil engineer for review and approval in accordance with Section 22.52.110 (Drainage) of the Land Use Ordinance. Provide calculations to determine if all drainage must be retained or detained on-site (the design of the basin shall be approved by the Department of Public Works).

Storm Water Control Plan

10. **At the time of application for construction permits**, the applicant shall demonstrate whether the project is subject to the LUO Section for Storm Water Management. Applicable projects shall submit a Storm Water Control Plan (SWCP) prepared by an appropriately licensed professional to the County for review and approval. The SWCP shall incorporate appropriate BMP's, shall demonstrate compliance with Storm Water Quality Standards and shall include a preliminary drainage plan, a preliminary erosion and sedimentation plan. The applicant shall submit complete drainage calculations for review and approval.

11. **At the time of application for construction permits**, if necessary, the applicant shall submit a draft "Private Storm Water Conveyance Management and Maintenance System" exhibit for review and approval by the County.

Conditions to be completed prior to issuance of a construction permit

Fees

12. **Prior to issuance of a construction permit**, the applicant shall pay all applicable school and public facilities fees.

Air Quality

13. **AQ-1: Odor Control. Prior to issuance of construction permits**, the applicant shall develop an Odor Control Plan for review and approval by the APCD that identifies potential odor sources and determines control strategies to reduce potential odors. Odor control strategies that can be incorporated into these plans include, but are not limited to, the following:

    - Identification and description of the most likely sources of odor;
    - A list of odor controls and best management practices that could be implemented to minimize odor releases: These best management practices shall include the establishment of the following criteria:

- Establish time limit for on-site retention of undigested substrates.
- Establish contingency plans for operating downtime (e.g., equipment malfunction, power outage).
- Manage delivery schedule to facilitate prompt handling of highly odorous substrates.
- Protocol for monitoring and recording odor events.
- Protocol for reporting and responding to odor events.

14. **AQ-2: Portable Equipment. Prior to issuance of construction permit,** the applicant shall obtain all required permits from the APCD for portable construction equipment (i.e. generators).

Hazards and Hazardous Materials

15. **HZ-1: Fire Safety. Prior to issuance of a construction permit**, the applicant shall provide a copy of the final *Fire Safety Plan* prepared by Cal Fire for this project and the *Preliminary Fire Protection Hazard Evaluation* prepared by Collings & Associates, July 30, 2016. The recommendations and requirements of the *Fire Safety Plan* and *Preliminary Fire Protection Hazard* Evaluation shall be implemented **prior to final occupancy**, and/or on-going for the life of the project.

16. **HZ-2: Prior to issuance of construction permits**, all structures shall be reviewed by the Air Traffic Division of the FAA regional office having jurisdiction over San Luis Obispo County to determine compliance with the provisions of FAR Part 77. In addition, applicable construction activities shall be reported via FAA Form 7460-1 **at least 30 days before proposed construction or application for building permit**. The applicant shall also coordinate with the FAA on potential structural encroachments into the glideslope critical areas as shown on the draft Airport Layout Plan.

17. **HZ-3: Prior to the issuance of construction permits;** the applicant shall provide a recorded avigation easement for each property developed within the area included in the proposed local action.

18. **HZ-4: Exterior Light Plan. Prior to issuance of construction permits**, the Applicant shall submit an Exterior Lighting Plan for both permanent and temporary facilities, for County review and approval. The Plan shall define the height, location, and intensity of all exterior lighting. All lighting fixtures shall be positioned "down and into" the development, and shielded so that neither the lamp nor the related reflector interior surface is visible from surrounding properties or the San Luis Obispo County Regional Airport. All lighting poles, fixtures, and hoods shall be dark colored. When nighttime lighting is required for construction, temporary lighting shall be hooded to the extent consistent with safety. Lighting fixtures shall be directed away from the airport to avoid glare and, when near a residence, shall be pointed away from the residence.

Transportation and Circulation

19. **TR-1: Traffic Impacts.** In order to mitigate offsite traffic impacts, fees shall be required for San Luis Obispo City transportation impact fees for various programs. These fees shall be paid to the City of San Luis Obispo, and evidence of payment or waiver shall be provided to the County, **prior to construction permit issuance**. These fees shall include:

    a. Citywide Transportation Impact Fee

b. Airport Area Specific Plan Fee
c. Los Osos Valley Road Interchange Mitigation Fee

Storm Water Control Plan

20. **Prior to issuance of construction permits**, if necessary, the applicant shall record with the County Clerk the "Private Storm Water Conveyance Management and Maintenance System" to document on-going and permanent storm drainage control, management, treatment, disposal and reporting.

Conditions to be completed during project construction

Site Development

21. The project shall provide for utilities being placed underground.

Building Height

22. The maximum height of the project is 45 feet from average natural grade.

a. **Prior to any site disturbance**, a licensed surveyor or civil engineer shall stake the lot corners, building corners, and establish average natural grade and set a reference point (benchmark).

b. **Prior to approval of the foundation inspection,** the benchmark shall be inspected by a licensed surveyor prior to pouring footings or retaining walls, as an added precaution.

c. **Prior to approval of the roof nailing inspection**, the applicant shall provide the building inspector with documentation that gives the height reference, the allowable height and the actual height of the structure. This certification shall be prepared by a licensed surveyor or civil engineer.

Air Quality

23. **AQ-3: Fugitive Dust Mitigation Measures.**
    a. Reduce the amount of the disturbed area where possible;
    b. Use water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. Increased watering frequency would be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible;
    c. All dirt stock-pile areas should be sprayed daily as needed;
    d. Permanent dust control measures identified in the approved project revegetation and landscape plans should be implemented as soon as possible following completion of any soil disturbing activities;
    e. Exposed ground areas that are planned to be reworked at dates greater than one month after initial grading should be sown with a fast germinating, non-invasive grass seed and watered until vegetation is established;
    f. All disturbed soil areas not subject to revegetation should be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the APCD;
    g. All roadways, driveways, sidewalks, etc. to be paved should be completed as soon as possible and building pads should be laid as soon as possible after grading unless seeding or soil binders are used;

h. Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site;
i. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114;
j. Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site;
k. Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible;
l. All of these fugitive dust mitigation measures shall be shown on grading and building plans; and
m. The contractor or builder shall designate a person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures as necessary to minimize dust complaints, reduce visible emissions below 20 percent opacity, and to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the APCD Compliance Division prior to the start of any grading, earthwork or demolition.
n. Since water use is a concern due to drought conditions, the contractor or builder shall consider the use of an APCD-approved dust suppressant where feasible to reduce the amount of water used for dust control.

24. **AQ-4: Combustion Emission Mitigation Measures.**
a. Maintain all construction equipment in proper tune according to manufacturer's specifications;
b. Fuel all off-road and portable diesel powered equipment with CARB certified motor vehicle diesel fuel (non-taxed version suitable for use off-road);
c. Use diesel construction equipment meeting CARB's Tier 2 certified engines or cleaner off-road heavy-duty diesel engines, and comply with the State off-Road Regulation;
d. Use on-road heavy-duty trucks that meet the CARB's 2007 or cleaner certification standard for on-road heavy-duty diesel engines, and comply with the State On-Road Regulation;
e. Construction or trucking companies with fleets that that do not have engines in their fleet that meet the engine standards identified in the above two measures (e.g. captive or NOx exempt area fleets) may be eligible by proving alternative compliance;
f. All on and off-road diesel equipment shall not idle for more than five minutes. Signs shall be posted in the designated queuing areas and or job sites to remind drivers and operators of the five minute idling limit;
g. Diesel idling within 1,000 feet of sensitive receptors is not permitted;
h. Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors;
i. Electrify equipment when feasible;
j. Substitute gasoline-powered in place of diesel-powered equipment, where feasible; and
k. Use alternatively fueled construction equipment on-site where feasible, such as CNG, liquefied natural gas (LNG), propane or biodiesel.

25. **AQ-5: Hydrocarbon Contaminated Soil.** Should hydrocarbon contaminated soil be encountered **during construction activities**, the APCD shall be notified as soon as

possible and no later than 48 hours after affected material is discovered to determine if an APCD permit will be required. In addition, the following measures shall be implemented immediately after contaminated soil is discovered:

- Covers on storage piles shall be maintained in place at all times in areas not actively involved in soil addition or removal;
- Contaminated soil shall be covered with at least six inches of packed uncontaminated soil or other TPH –non-permeable barrier such as plastic tarp. No headspace shall be allowed where vapors could accumulate.
- Covered piles shall be designed in such a way to eliminate erosion due to wind or water. No openings in the covers are permitted;
- The air quality impacts from the excavation and haul trips associated with removing the contaminated soil shall be evaluated and mitigated if total emissions exceed the APCD's construction phase thresholds;
- During soil excavation, odors shall not be evident to such a degree as to cause a public nuisance; and
- Clean soil shall be segregated from contaminated soil.

26. **AQ-6: Lead During Demolition.** The applicant shall contact APCD **ten days prior to the start** of any demolition, renovation, or retrofitting work to determine if a lead work plan is required. An APCD permit may be required; if required the permit shall be obtained prior to any demolition, renovation, or retrofitting work.

27. **AQ-7: Naturally Occurring Asbestos. Prior to any construction activities at the site,** the applicant shall ensure that a geologic evaluation is conducted to determine if the area disturbed is exempt from the asbestos regulation. An exemption request shall be filed with the APCD. If the site is not exempt from regulation, the applicant shall comply with all requirements outlined in the Asbestos ATCM. This may include development of an Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program approved by the APCD.

28. **AQ-8: Demolition Asbestos. Prior to any construction activities at the site,** the applicant shall comply with all requirements of the National Emission Standard for Hazardous Air Pollutants. These requirements include, but are not limited to:
    a. written notification, within at least 10 business days of activities commencing to the APCD
    b. asbestos survey conducted by a certified Asbestos Consultant and
    c. applicable removal and disposal requirements of identified ACM. Please contact the APCD Enforcement Division at(805) 781-591 2 and also go to slocleanair.org/business/asbestos.php for further information. To obtain a Notification of Demolition and Renovation form go to the" Other Forms" section of: slocleanair.org/business/onlineforms.php.

29. **AQ-9: Idling Restrictions.**
    a. Driver's shall not idle the vehicle's primary diesel engine for greater than 5 minutes at any location;
    b. Driver's shall not operate a diesel-fueled auxiliary power system (APS) to power a heater, air conditioner, or any ancillary equipment on that vehicle during sleeping or resting in a sleeper berth for greater than five minutes at any location when within 100 feet of a restricted area;
    c. Signs shall be posted in the designated queuing areas and job sites to remind drivers

of the five minute idling limit;

d. Off-road diesel equipment shall comply with the five minute idling restriction identified in Section 2449(d)(3) of the California Air Resources Board's In-Use off-Road Diesel regulation: www.arb.ca.gov/regact/2007/ordiesl07/frooal.pdf.
e. Signs shall be posted in the designated queuing areas and job sites to remind off-road equipment operators of the five minute idling limit.

Geology and Soils

30. **GS-1: Geotechnical Recommendations.** The applicant shall implement the recommendations of the *Geotechnical Engineering Report* prepared by Earth Systems Pacific, dated March 2016.

Conditions to be completed prior to occupancy or final building inspection /establishment of the use

31. **Prior to occupancy or final inspection**, which ever occurs first, the applicant shall obtain final inspection and approval from CDF of all required fire/life safety measures.

32. **Prior to occupancy of any structure associated with this approval**, the applicant shall contact the Department of Planning and Building to have the site inspected for compliance with the conditions of this approval.

Air Quality

33. **AQ-10: Permit to Operate. Prior to final inspection or occupancy,** the applicant shall obtain a permit to operate from the SLO APCD. The applicant shall install a Selective Catalyst Reduction (SCR) and oxidation catalyst (Oxicat) system on the combined heat and power (CHP) unit.

Hazards and Hazardous Material

34. **HZ-5: Environmental Health. Prior to occupancy or final inspection,** the applicant shall obtain the appropriate permits from the Department of Environmental Health for the process gasses produced. Depending on reportable quantities, a Hazardous Materials Business Plan may be required (including potential for a Risk Management Plan). The project may necessitate updates to the Waste Connections, Inc. Business Plan, including, but not limited to, the site plan.

Water and Hydrology

35. **WR-2: Water System. Prior to occupancy or final inspection**, the site shall have a permit from the Department of Environmental Health for a Non-Transient Non-Community Water System (reactivation of the CBI water system permit).

Notice of Use

36. A notice listing the authorized land uses for a site shall be recorded in the Office of the County Recorder **prior to occupancy or final inspection.**

On-going conditions of approval (valid for the life of the project)

37. This land use permit is valid for a period of 24 months from its effective date unless time extensions are granted pursuant to Land Use Ordinance Section 22.64.070 or the land use permit is considered vested. This land use permit is considered to be vested once a

construction permit has been issued and substantial site work has been completed. Substantial site work is defined by Land Use Ordinance Section 22.64.080 as site work progressed beyond grading and completion of structural foundations; and construction is occurring above grade.

38. All conditions of this approval run with the land and shall be strictly adhered to, within the time frames specified, and in an on-going manner for the life of the project. Failure to comply with these conditions of approval may result in an immediate enforcement action by the Department of Planning and Building. If it is determined that violation(s) of these conditions of approval have occurred, or are occurring, this approval may be revoked pursuant to Section 22.74.160 of the Land Use Ordinance.

Hazards and Hazardous Material

39. **HZ-6:** The non-residential density for this property shall be limited to 353 persons.

40. **HZ-7:** The building coverage for this property shall be limited to 1.25 acres (54,450 square-feet).

41. **HZ-8:** All moderately noise sensitive land uses on the project site shall include noise mitigation as required by the ALUP.

42. **HZ-9: For the life of the project,** no structure, landscaping, apparatus, or other feature, whether temporary or permanent in nature, shall constitute an obstruction to air navigation or a hazard to air navigation, as defined by the ALUP.

43. **HZ-10: For the life of the project,** any use is prohibited that my entail characteristics which would potentially interfere with the takeoff, landing, or maneuvering of aircraft at the Airport, including:
    - Creation of electrical interference with navigation signals or radio communication between the aircraft and airport;
    - Lighting which is difficult to distinguish from airport lighting;
    - Glare in the eyes of pilots using the airport;
    - Uses which attract birds and create bird strike hazardous;
    - Uses which produce visually significant quantities of smoke; and
    - Uses which entail a risk of physical injury to operators or passengers of aircraft (e.g. exterior laser light demonstrations or shows

44. **HZ-11:** All owners, potential purchasers, occupants (whether as owners or renters), and potential occupants (whether as owners or renters) shall receive full and accurate disclosure concerning the noise, safety, or overflight impacts associated with airport operations prior to entering any contractual obligation to purchase, lease, rent, or otherwise occupy any property or properties within the airport.

45. **HZ-12: For the life of the project,** any fueling stations in connection with this project shall be processed through an amendment to this Conditional Use Permit, and shall require, at a minimum, referral to and recommendation from the Airport Land Use Committee.

46. **HZ-13: For the life of the project,** any proposed solar system installation shall be referred to the Airport Manager for review and approval. The proposed solar system

project shall be evaluated by the FAA Solar Glare Hazard Analysis Tool (SGHAT) and be designed to mitigate glare to the maximum extent possible.

47. **HZ-14: For the life of the project,** any development shall be setback from the fence line to ensure nothing creates an opportunity for someone to easily climb over the fence and violate airport security.

Water and Hydrology

48. **WR-1: Cross Connection.** If a cross-connection review by the Department of Environmental Health determines a cross-connection device is necessary, then an annual device test is required.