TO: Morning Star Case File

FROM: Wendy Wyels
Supervisor, Compliance and Enforcement Section

DATE: 3 November 2015

SUBJECT: ***SUMMARY OF MEETING WITH MORNING STAR PACKING COMPANY, WILLIAMS, COLUSA COUNTY***

On 2 November 2015, Water Board staff (Andrew Altevogt, Howard Hold, Guy Childs, and I) met with representatives of Morning Star Packing Company (Chris Rufer, Ross Oliveira, Niraj Raj, and John) at the Williams facility. The purpose of the meeting was to discuss the 11 September 2015 Notice of Violation, to better understand how the facility operates, and discuss what went wrong during the 2015 processing season.

The owner of the company, Chris Rufer, provided a significant amount of background information:

- The plant was expanded by 75% this year.
- Every 7-14 days, an evaporator is taken down to clean. The tomato waste goes into the wash stream to the Settling Pond.
- There were a number of spills from the flumes this year. That water went to the Settling Pond.
- There were a lot of problems at the facility this year.
- They're trying to be more efficient with their water usage.

- With regard to BOD:
    - 1,250 gpm of wastewater was applied to the fields this year (as compared to 1,500 gpm last year).
    - This means that 900-1,000 pounds of BOD/hour went into the field. The BOD comes from the tomatoes, so this equates to lost product (and lost revenue).
    - They have no incentive to put BOD on the ground.
    - If the BOD can't be reduced to avoid odors, then DAF tanks could be installed.

- Evaporation process:
    - The tomatoes are concentrated from 5-6% solids to 31% solids during processing.
    - The first step is to heat tomatoes and remove some of the skin/seeds.
    - Then the product goes into the evaporators. There's a high vacuum on this system in order to evaporate liquid at a lower temperature. When the water is boiling and steam comes off at a high rate, organic matter is pulled into the steam. They design the system so that there's not "a significant amount" of organic matter coming off. This organic matter goes to the Cooling Pond.
    - The next step is the condenser, to turn the steam to water. Heat from the steam heats up the water. Then the water is cooled in the Cooling Pond.

- Cooling Pond
    - Some organics go into the Cooling Pond. BOD consumes oxygen in the water. Oxygen naturally diffuses into water, so Mr. Rufer has calculated how much surface area of a pond is needed to replace the lost oxygen.
    - There are two purposes of the Cooling Pond: cool the water and add oxygen to mitigate the BOD that enters it.
    - The Cooling Pond was expanded this spring from 60 acres to 100 acres.
    - There's always "carryover of organics" into the condenser, which then enters the Cooling Pond.
    - Mr. Rufer is confident that this year's odor complaints were due to extra organic material entering the Cooling Pond. He stated that "you don't expect to have that much carryover or that concentration into the Cooling Pond." However, extra carryover happened when a new evaporator was started up.
    - It's not possible to determine how much "extra" organic waste went into the Cooling Pond this year. All Morning Star can do is determine the day that the new evaporator began operating and the day it was stopped and re-plumed to the Settling Pond.

- Settling Pond
    - The Settling Pond is used to settle the heavier soils. It is cleaned out every year. A berm is broken and equipment drives down into the pond to clean it out. The solids are applied to the cropland.

- BOD
    - Chris stated that there was a lot of excess BOD coming out of the plant this year.
    - Ross stated that they have a BOD limit of 150 lb/ac/day for sprinkler irrigation. I stated that I don't see that in the permit, just a limit of 100 lb/ac/day that is not tied to the type of irrigation. Ross or Chris then referenced the CLFP Manual as the source for the 150 lb/ac/day value, but it's not in the WDRs.

- Amount of Land Irrigated
    - Chris said he had a handshake deal to buy 480 acres next to the facility. That's when Ross contacted Permitting staff (December 2014) to inquire how to add more land to the WDRs. But the deal fell through.
    - The 100 acres of Gobel land wasn't used this year or last year. If Gobel won't lease it to Morning Star then they can't put wastewater on it.

- Cooling Pond
    - There was no discharge from the Cooling Pond in 2015. Water stays in it all winter. During our tour of the facility following the meeting, I observed water in the Cooling Pond.
    - It's now 100 acres, with a depth of 3-4' at the south end and 6-8' at the north end. The land slopes to the north, so the new 40 acre portion is deeper than the original portion.
    - The land to the northwest of the Cooling Pond is now a stormwater basin. Soil was excavated from this area to use in building the Cooling Pond berms and the pad for the expanded warehouse. They excavated to groundwater. The standing water that we saw in this area in the summer and today is groundwater.
    - I asked about the Cooling Pond design drawings that were submitted to us. They show a Phase I and Phase II expansion and 200 acres of ponds. Chris said that he was originally going to build to the east but then decided to expand to the north. They may

put in more Cooling Ponds later if they don't need to use all the cropland. But for now, they're not planning on expanding the Cooling Pond again (i.e., no Phase II for now).
    - The Cooling Pond was expanded in the Spring of 2015.
    - It's built out of compacted native soil.

- Warehouse
    - It's an open area, with no roof. Finished product is stored here until shipped by rail.
    - The warehouse area was expanded to the north because they expanded their production.
    - They only make tomato paste, and only for three months of the year. There's no other operations at this facility.

I then asked a number of questions related to the monitoring reports.

- Lab DO readings
    - Ross explained that FGL has a DO meter and would take a reading when they came to the facility for the other monitoring. Ross will provide the lab sheets.
    - FGL analyzed the DO on site, immediately. Ross said that FGL followed the process described by YSL, the DO meter manufacturer, in that they collected a sample of water and then poured it into a beaker before measuring. Ross says that another DO meter manufacturer, Hatch, says to follow the same process. I said that that the EPA method says to measure the DO in situ, and that pouring into a beaker introduces oxygen.

- Sampling locations for DO
    - We discussed the terminology in the permit which states that pond samples must be collected "opposite the inlet". This term is open to interpretation and resulted in discussion, but I said that what is needed is a representative sample of the entire pond (both Cooling Pond and Settling Pond). Chris said several samples would be better than one.
    - We should revise the MRP to clarify the sampling location.
    - Ross says that MS already sent the Sampling and Analysis Plan that was required by the NOV. I think he means the document that Narij emailed last week, and if so, I don't think it has the specificity that we want.

- Odors
    - Chris asked if there was a way to monitor odors and I described the Odotech system. Chris asked Ross to look into it.

- Stormwater
    - I asked about how they would handle the stormwater runoff from their fields this year. Ross described the process by which they close off the ditches, allow rainfall to flush the fields, sample, and then wait for our approval to open the ditches.
    - They're implementing the same process this year. The ditches are blocked off now. Ross will probably collect samples next week and will send the data to Guy.
    - All stormwater from the facility (industrial stormwater) goes to three or four stormwater ponds. The silage leachate also goes to these ponds.

- Residual Solids
    - I stated that their 2015 monitoring reports show that they've put residual solids on their fields, but we don't have any indication that they submitted the report required by the WDRs. Ross was unaware of the need for the report and I told him to get in in quickly.

  - Ross and Chris said that this is the first year they've put residual solids on the fields. Previously it was sold to Gilton who hauled if off. But Gilton raised the price this year and Chris decided to make silage with the solids. We observed multiple large silage tubes on the south and east side of the property. The WDRs do not discuss a silage operation.
  - The silage was mixed on a 15,000 sq ft concrete pad. Items such as almond hulls and straw were blended with the solids to make the silage. However, "mixing became a mess"; there were problems with a few loads and they were dumped on field MS24 in August and September this year.
  - No residual solids were hauled off this year.

- Settling Pond solids
  - These were applied to the fields last year and will be applied again this year.
  - Morning Star does not need to submit the report described in the WDRs because solids were applied to the fields (the report is only required if they want to apply to land).
  - The WDRs say that the solids must be removed from the Settling Pond by Nov 15. I don't know if MS will get it done by then.

- Land Application data
  - The MRP is inconsistent between what is to be monitored vs what is to be reported. The MRP should be revised before the next processing season.

- Odor Monitoring
  - We discussed the locations at which Morning Star conducted its daily odor monitoring.
  - Niraj provided a map. Four locations are at the edge of MS property: Field MS 2/MS3, Husted/I-5 overpass (next to MW-5), Old 99, and MS-16. However the Abel/Husted location is at the north end of the Gobel field. Morning Star did not apply wastewater to Gobel's field this year, so that monitoring point is off-property, not on-property.

We concluded the meeting with a tour of the facility.

TO: The Morningstar Tomato Packing Company, Colusa County, Case File

FROM: Howard Hold, P.G.
Senior Engineering Geologist,
WDRs Compliance and Enforcement Unit.

DATE: 5 November 2015

SUBJECT: Summary of 2 November 2015 Meeting between The Morningstar Tomato Packing Company and the Regional Board WDRs Compliance and Enforcement Unit.

On 2 November 2015, Water Board staff (Andrew Altevogt, Wendy Wyels, Howard Hold, and Guy Childs) met with . Chris Rufer (owner of Morning Star Packing, L.P). and his management team (Ross Oliveira, Niraj Raj, and John Coughlin) to discuss the 11 September 2015 Notice of Violation and the compliance issues that occurred at the facility during the past processing season.

The meeting agenda was prepared by Morning Star Packing. The majority of the presentation was made by Mr. Rufer, which is summarized below. Following a break, Wendy Wyels presented questions that the Regional Board needed clarification for evaluation of compliance and then a site walk was performed. Photographs from the inspection are included at the end of the memorandum.

- **Mr. Rufer:** The presence of BOD in the wastewater is a major concern to the plant efficiency. High BOD in wastewater indicates that the plant can operate more efficiently. The BOD affects the hydraulic loading on the LAAs. The source of the BOD is the smashed tomatoes themselves. The facility land applies approximately 900-1,000 ponds/hr of high BOD wastewater. A DAF unit could be installed to reduce BOD in the wastewater. There is no economic reason for Morningstar to allow BOD to remain high. Essentially raw product is leaving the facility and applied to the fields. At $83 to $100/ton, it is costly not to correct.

- **Mr. Rufer:** The Plant expanded operations by 75% this last season. They increased production from 1.4 million tons last season to 2.01 million tons of tomato paste this year.

- **Mr. Rufer:** The tomatoes arrive with 5-6% solids and they are condensed through the process to a paste which is 30%. The facility receives approximately 45 loads/hour. (Unclear on load mass or volume). The tomatoes are “flumed” and during this process the MOT (material other than tomatoes) is separated, and then the tomatoes are skinned and placed into evaporators which are under vacuum. The vacuum allows for the water in boil at a lower temperature. While the plant is more efficient under vacuum, it does draw organic material through the system itself while under vacuum. The organic matter

is discharged to the cooling pond. The organic material discharged to the pond can be the probable source of nutrients needed to generate odors. Along the way the heat is transferred to the water discharging to the pond. It enters the pond at approximately 120 degrees Fahrenheit and returns to the system at 100 degrees Fahrenheit. This is only an 18 % decrease in temperature.

- **Mr. Rufer:** The cooling pond was expanded from 60 acres to 100 acres prior to the processing season. Once in the cooling pond, oxygen will be replenished with the water interaction with the atmosphere. The large surface area allows for greater oxygenation. The residual organics are thought to be the source of the odors in the cooling pond. That is how the system is designed.

- **Mr. Rufer:** To address the plant out of balance, which led to the discharge into the cooling pond, it is unclear when the excess organics were discharged to the pond.

- **Mr. Rufer:** There is no reason to discharge from the cooling pond. The water remains all winter. It is now 100 acres and ranges from 6 to 8 feet deep. There is compacted soil as the base to the cooling pond. The 200 acre expansion did not happen.

- The area adjacent to the Pond is known as the warehouse. (there is no actual building)

- **Mr. Rufer**: The BOD in the field is problematic. There were spills of tomatoes throughout the season. Common for workers to remove screens to clear blockages which allow tomatoes to raft out to the field. $4.5 million dollars of incentives not to allow this to occur, it is lost product. They apply by roto-sprinkler to one field, 150 lbs/acre BOD. (WDRs only allow 100lbs/acre).

Wendy Wyels' questions:

- How are dissolved oxygen measurements taken? Ross Olivera answered that they use a Hach Meter as well as have an independent laboratory collect and analyze within the allowed holding time.

- Where are the sample readings from the Settling and Cooling ponds taken? The term "opposite from the inlet" is problematic. Wendy Wyels clarified the Board's expectation. Opposite the inlet.

- Chris Rufer asked how to monitor odors. Wendy Wyels explained about OdoTech, a software package that models facility odors and how different dischargers that are regulated by the Board use this program.

- How will stormwater from the fields be managed this winter? It goes out to the LAA and is held there until the fields are flushed clean by the rain.

- What about the residual soilds? At this time the Regional Board has not received the required data. Morningstar confirmed that they had not submitted their data, and Mr. Rufer went onto expand the answer to explain his limitations. In the past, Gilton Solid Waste would pay Morningstar for the material, this year they were going to charge $600k to haul of the solids. Rather than pay the $600k, Morningstar would produce their own silage. (This is not in the WDRs – should it be under the new compost Order?)

(Economic gain for not complying with the permit). Since they are not experienced in producing silage, the first batches were too wet and rotted. That material was land applied onto the fields, estimates 300 tons of material. Now receiving almond hulls and other material to bulk up the silage. (Not in the WDRs).

- There was a discussion about the land available for land application. They tried to secure land for more land application land, but the deal fell through. The owner of the property that Morningstar was trying to negotiate a deal with told Mr. Rufer that "Tomato water ruins the land".

- Why wasn't the Gobel property used this season? Mr. Rufer explained that the Gobel property was not used this year because they won't lease it to Morningstar. Wendy Wyels explained that the WDRs were issued with the understanding that that property was always available for wastewater application. (the Anti Degradation analysis in the WDRs is based on acreage in the WDRs. Less land and more volume will lead to over loading the fields)

- The monitoring reports appear to be missing flow meter data and the nitrogen update value for the crop. Ross Oliveira said they grow sudan grass and cut and bail three times a year.

- With regard to the odor complaints, Ross Oliveira believes they only received between 5 and 7 odor complaints during the processing season.

Following the meeting, Mr. Rufer led a tour of the facility. Below are photographs and notes from that tour.

The facility inspection was arranged by Wendy Wyels. Morningstar owner, Chris Rufer, approved the visit. There were rain showers on the day of the inspection. No processing was occurring on the day of the inspection. No odors were detected.

Stormwater is flowing into a drain, which is shown by the white arrow.

Looking south across the empty Settling Pond. The only aerator is still in the pond. I asked how they removed the solids. Mr. Rufer thought there was a ramp for equipment to enter the pond, but Mr. Coughlin said they remove the toe berm and bring equipment in that way. The pond is supposed to operate with a depth of five-feet. It appears there is a tremendous amount of sludge material on the pond bottom. Specification G.1. of the WDRs require the sludge and sediment to be removed from the Settling Pond by 15 November. In the background are the mounds of silage, as well as stacks of hay.

This is where the tomatoes are rafted out of the haul trailers and begin traveling in the flume.

Looking north from where the tomatoes are offloaded across the 100-acre cooling pond. The yellow arrow points to the area known as the “warehouse”.

Looking north across the eastern limit of the cooling pond. The yellow arrow points to monitoring well MW3; the green arrow is the outfall of the cooling pond. The red arrow marks the ditch that conveys waste water to the LAA. The ditch runs parallel to the pond’s berm. The purple arrow marks another area that silage is stored.

This is a mechanical evaporator currently installed at their facility.

One of two chemical tanks observed during the inspection. As shown in this photograph, the liquid in this tank is a Class 8 Corrosive liquid. According to the MSDS, mixing with water can cause a violent reaction. It is unclear if this tank double lined.

These are the evaporators that Mr. Rufer discussed during the meeting. Three additional evaporators were brought online for the 2015 processing season.

Looking north across the enlarged 100-acre cooling pond. The warehouse is on the left (west side) of the pond.

Howard Hold, P.G.,
Senior Engineering Geologist

TO: Morning Star Packing Case File

FROM: Guy Childs, PG
Engineering Geologist
WDRs Compliance and Enforcement Unit

DATE: 5 November 2015

SUBJECT: ***SUMMARY OF 2 NOVEMBER 2015 MEETING WITH MORNING STAR PACKING, L.P., COLUSA COUNTY***

On 2 November 2015, Water Board staff (Andrew Altevogt, Wendy Wyels, Howard Hold, and myself) met with representatives of Morning Star Packing, L.P. (Chris Rufer, the owner, Ross Oliveira, Niraj Raj, and John Couglin) at the facility in Williams. The facility is regulated by Waste Discharge Requirements R5-2013-0144. The meeting was to discuss the 11 September 2015 Notice of Violation and to obtain information regarding operation of the facility.

The following is a summary of information obtained from Morning Star Packing Company, L.P and questions asked by Board staff during the meeting and from the tour of the facility.

- Mr. Rufer indicated that the source of the BOD is from the tomato serum and during 2015 there was excessive BOD from the tomatoes harvested in 2015.

- Mr. Rufer indicated that during 2015 there was 1,250 gallon per minute of wastewater applied to the fields, and between 900 and 1000 pounds of BOD per hour was discharged in to the fields. He also indicated that if they could not reduce the BOD to prevent odors that Dissolved Air Floatation Tanks could be installed.

- Mr. Rufer indicated that they expanded the production by 75 percent in 2015. Increased production of fresh tomatoes into paste from 1.3/1.4 million tons to 2.01 million tons of tomatoes into paste.

- Mr. Rufer indicated that the depth of the Cooling Pond ranges from 3 to 4 feet deep to the south (in the original 60 acre pond) to 6 to 8 feet to the north (expanded portion of the pond). The Cooling Pond was expanded from 60 acres to 100 acres during the spring of 2015. The bottom of the pond was constructed with compacted native soil.

- Mr. Rufer indicated that the Cooling Pond was expanded to increase the surface area and better cool the water that is returned to the cooling pond. He also stated that the temperature of the water into the Cooling Pond is 120 degrees Fahrenheit and the temperature of the water from the Cooling Pond back to the plant is 100 degrees Fahrenheit

- Board staff asked about the standing water that was observed during the 20 August 2015 inspection. Mr. Oliveria indicated that this was groundwater that was encountered during the excavation of soils west of the warehouse construction site.

- Mr. Rufer indicated that that there were a total of seven evaporators at the plant. Of these, three of the evaporators were new.

- Mr. Rufer indicated that that there is "carry over" of organic material into the condenser. This "carry over" of organic material enters the Cooling Pond. Excessive "carry over" of organic material occurred when the new evaporators were started up. This organic material was discharged into an overflow tank that was plumbed to the Cooling Pond. He also indicated that the overflow tank has since been re-plumbed to the gutters that discharge to the Settling Pond.

- Mr. Rufer indicated that they own 840 acres of land and 480 acres is used for land application. He also indicated that they had not leased the 95 acres of Gobel Property for the last two years. In regards to additional land, he stated that they had a handshake deal to purchase additional land, however the deal fell through. He also stated were looking to rent additional land, however the land was not available.

- Mr. Oliveria indicated that the BOD limit for the sprinkler irrigation system was 150 lb/acre/day. Board staff indicated that the WDRs only include a BOD limit of 100 lbs/acre/day, regardless of the type of irrigation. . Mr. Oliveria indicated that the 150 lb/ace/day is referenced in the California League of Food Processors Handbook.

- Mr. Rufer indicated that the new warehouse was completed because they expanded their production. He also indicated that the warehouse would not be a covered structure. The finished tomato paste product is stored until it is shipped by rail car.

- Board staff asked about the engineering report that was submitted in response to the 11 September 2015 Notice of Violation which showed a proposed expansion of 200 acres of ponds. Mr. Rufer indicated that they were planning to build the additional Cooling Pond to the east, however because of additional costs decided to construct the additional cooling pond to the north. He also indicated that they were not planning for another expansion.

- In regards to the dissolved oxygen (DO) measurements, Board staff indicated that the Waste Discharge Requirements (WDRs), Monitoring and Reporting Program (MRP) require that the DO measurements are to be taken opposite the inlet of the discharge. Mr. Oliveria indicated that DO measurements in the Settling Pond and the Cooling Pond were being taken at the return areas because these were at the end of the pond. Board staff indicated that representative samples are required. Mr. Oliveria indicated that they had also had a laboratory collect DO samples from the pond using a YSI meter. The samples were collected using procedures from YSI.

- In regards to odors, Mr. Rufer asked how odors could be monitored. Board staff indicated that another facility was using an Odortech system. They indicated that they would be looking into an odor monitoring system. In addition, we discussed the locations at which Morning Star conducted its daily odor monitoring. They provided a map with locations and indicated that the monitoring locations (Husted/I5, Old Hwy 99, and Husted/Abel) identified on the Daily Assessment Reports as onsite monitoring locations were accurate.

- Board staff indicated that based on review of the monitoring reports that residual solids were placed on the irrigation fields. However, Morning Star did not submit the required technical report first. Board staff told them they needed to submit the required report. They indicated that they had not hauled any solids offsite, and that this was the first year that they had applied residual solids to the irrigation fields. They indicated that previously the solids were hauled offsite by Gilton. However, because Gilton raised its prices this year the solids were used for silage. During the tour, large silage tubes were observed on the east and south sides of the property.

- Board staff asked Morning Star how they were planning to manage their storm water from the land application fields this winter. Mr. Oliveria indicated that they would implement the same process as conducted in 2014, which included: closing off the irrigation ditches, flushing the fields, collecting samples in accordance with the MRP, submitting a report, and waiting for approval. Mr. Oliveria also indicated that they would be collecting samples associated with the rain event next week. Mr. Oliveria also indicated that all storm water from the facility goes to three or four storm water ponds. In addition, the leachate from the silage also discharges to these ponds.

Photographs taken during the tour of the facility are attached to this memo.

Figure No. 1: Looking southeast at the Settling Pond that had been drained.

Figure No. 2: Looking at the accumulated solids in the Settling Pond.

Figure No. 3: Looking south at the Setttling Pond with some wastewater and accumulated solids.

Figure No. 4: Looking southeast at one of the silage tubes being stored at the site.

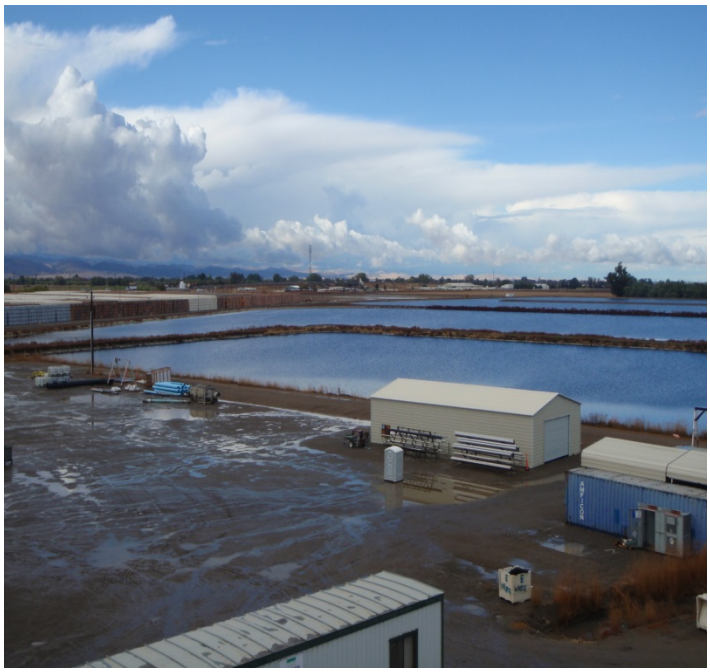

Figure No. 5: Looking northwest at the Cooling Pond. Morning Star Packing indicated during the meeting the pond had been expanded from 60 to 100 acres in size. The warehouse expansion is located just west of the pond.

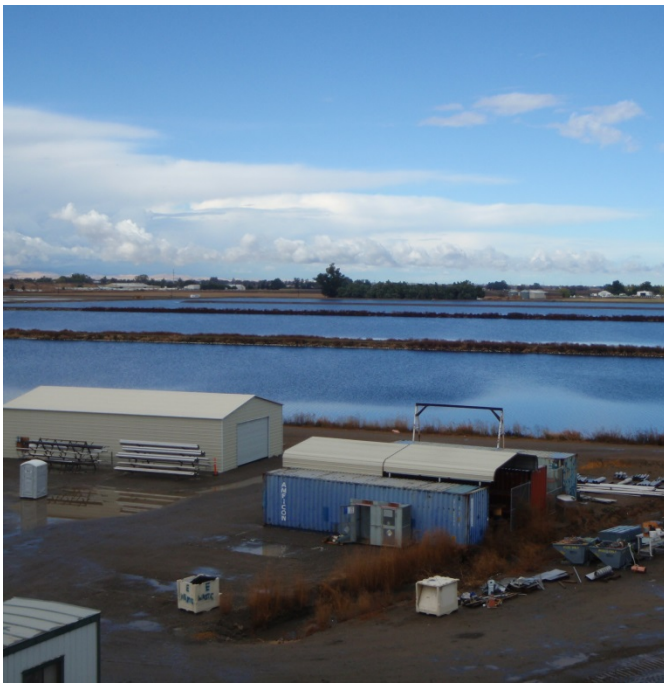

Figure No. 6: Looking north at the Cooling Pond.

Figure No. 7: Looking north at the Cooling Pond.

Figure No. 8: Looking northeast at the Cooling Pond.

Figure No.9: Looking northeast at a portion of Cooling Pond and another Silage tube.

Figure No. 10: Looking south at a portion of the evaporation system.

Figure No. 11: Looking south at evaporation system. The concrete structure is the outlet of the Cooling Pond.

Figure No. 12: Looking at recently installed piping from the evaporation system overflow tank to the gutter system. The Morning Star representative indicated that this piping was added following the extreme “carry over” of organic material that occurred when the new evaporator were installed.

Figure No. 13: Looking north at the discharge outlet channel of the Cooling Pond. The Morning Star representative indicates that the temperature of this water is 120 degrees when the processing plant is operating.

Figure No. 14: Looking north at the return inlet channel of the Cooling Pond. The Morning Star Packing representative indicates that the temperature of this water is 100 degrees when the processing plant is operating.

Guy Childs, P.G., Engineering Geologist