Response to Comments for Pasco Landfill Regenerative Thermal Oxidizer Air Quality Permit Public Comment Period, March 20 – April 20, 2017

Comments 1 – 9: from Riddell Williams, received April 20, 2017

Comment 1. Clarification of RTO System Responsibility. As a preliminary comment, the revised TSD correctly clarifies that the IWAG is responsible for cleanup of Zone A at the Site, and that the RTO is intended to support the IWAG's operation of a soil vapor extraction (SVE) system located in Zone A. The revised TSD is in many ways responsive to Basin's prior comments in this regard, and Basin appreciates Ecology's efforts to address those comments. Still, other language in the revised TSD states that "Pasco Landfill proposes that the RTO . . . represents BACT and t-BACT." As stated in Basin's prior comments, that language could potentially lead to confusion because Pasco Sanitary Landfill, Inc. (PSLI) is an independent potentially liable person (PLP) at the Site. And, like Basin, PSLI is not a member of the IWAG.

Basin submits this comment to confirm that the IWAG and its technical consultants are responsible for all representations regarding the RTO and its performance, as well as for installation, operation, and maintenance of the RTO and SVE systems. Similarly, although the source name listed in the revised TSD is still listed as "Pasco Sanitary Landfill," Basin emphasizes for the record that this refers to the location of the source and not to any particular party's responsibility for the source. As accurately stated in the revised TSD, the source of contaminants to be treated by the RTO is "[t]he SVE system . . . currently operated as part of an interim action cleanup strategy for the IWAG to prevent the spread of subsurface contaminants from Zone A, under Agreed Order No. [DE] 9240."

> **Ecology Response**: While this comment appears to be a statement, Ecology will respond again that the Air Quality Approval Order is not the vehicle for establishing or limiting responsibility for clean-up activities at Zone A. No change is made to the Approval Order on the basis of this comment.

Comment 2. Clarification of RTO Purpose and Oversight. The public notice published by Ecology for the new Preliminary Determination states that "Pasco Landfill cleanup requires installation of equipment to control emissions of gases" from the IWAG's SVE system in the distinct Zone A industrial waste area of the Site. This statement is clarified in the revised TSD document, which states that ongoing operation of the IWAG SVE system in Zone A is an interim action only, and that SVE system operations are governed by the Toxics Cleanup Program (TCP) under Agreed Order No. DE 9240. Basin submits this comment to clarify that the proposed RTO unit, like the IWAG SVE system, is an interim remedial action at the Site. Consequently, the RTO is ultimately governed by the terms of Agreed Order No. DE 9240 and TCP oversight.

TCP is still in the process of selecting a final remedy for the Site. TCP has not made a determination that final cleanup of the Site requires operation of the IWAG SVE system in a manner that would require effluent treatment by an RTO. Basin emphasizes that, as explained by Ecology in its response to Basin's earlier comments, the Air Quality Program's (AQP) approval of the RTO installation has no bearing on TCP's ongoing approval of interim remedial action or on its selection of a final remedy for the Site.

Ecology Response: Ecology disagrees with this comment. The RTO systems are regulated by the Ecology Air Quality Program under the Approval Order under consideration here. If, under the Agreed Order, it is determined that remediation without air impacts is to be pursued, the RTO and its approval may be retired. Again, this comment is a statement requiring no change to the Approval Order.

Comment 3. Submittals and Communications. As noted above, and in Basin's prior comments, the proposed RTO would be a component of the IWAG's ongoing interim action SVE system operations at the Site's Zone A industrial waste repository. Because the proposed RTO is therefore governed by Agreed Order No. DE 9240, Basin reiterates its request that any final Ecology Approval Order, and any future submittals, notifications, and other related communications regarding the RTO, be sent not only to AQP but also to TCP and all other Agreed Order project coordinators for the Site. This would be consistent with AQP's stated practice and objective of following the Agreed Order communication protocols.

Ecology Response: Ecology disagrees that the RTO and its air quality approval order are governed by Agreed Order 9240. We have however agreed to follow communication protocols of the Agreed Order. Ecology even agreed to copy Basin Disposal as we negotiated resolution of the violation(s) associated with the failed GCE RTO. Each time the AQP noticed that Basin Disposal was not on a distribution list, we requested that be changed. Even so, we were presented with a public records request requiring up to 16 hours of records review for each AQP staff person involved with this project. The records may best be provided through the public records request process so that Ecology only has to provide them once.

Comment 4. Potential Emissions, Emission Limits, and DRE Requirements. Basin appreciates Ecology's thorough updating of the TSD for the new Preliminary Determination. Among other things, Ecology updated its prior Part 70 determination as suggested in Basin's prior comments. Updating the prior Part 70 determination resulted in substantive modifications to the Preliminary Determination to reflect the RTO's proposed status as a synthetic minor source.

As in its prior comments, Basin notes that the new Preliminary Determination includes RTO emission limits and DRE standards for only certain Toxic Air Pollutants (TAPs) and other constituents and compounds. By contrast, when the IWAG's Zone A SVE gas was previously treated at the Municipal Solid Waste (MSW) Landfill flare, the Landfill Group was required to perform regular air quality evaluations for a wider range of TAPs, including benzene.[1]

Whether or not Ecology now imposes a Destruction and Removal Efficiency (DRE) requirement for emissions constituents and compounds other than the twelve identified in Condition 2.e of the new Preliminary Determination, Basin seeks confirmation that initial and ongoing RTO performance testing will account for and report on emissions of additional constituents and compounds. Basin also requests that Ecology regularly re-evaluate the constituents and compounds measured in SVE gas, as

[1] Basin again observes that certain TAPs for which no emission limits are established in the new Preliminary Determination were present in the RTO process stream, even at low SVE system flow between October 2015 and October 2016, at loading rates that exceeded de minimis and/or small quantity emission rate (SQER) standards. Those TAPs include tetrachloroethene, 1,2-dichloroethane, benzene, naphthalene, and vinyl chloride.

well as the SVE gas flow rate, to determine whether additional DRE requirements are needed to protect human health and the environment. Basin's concern in this regard stems both from the inherent uncertainty of the SVE gas process stream and from its understanding that the IWAG intends to increase SVE flow rates substantially in the future.[2]

As discussed below, Basin recognizes and appreciates Ecology's efforts to require bi-weekly collection and monthly reporting of SVE gas data. But, that process stream may change over time with the rate and nature of both subsurface contaminant releases in Zone A and SVE system operation. Because process stream changes cannot be predicted, Basin seeks confirmation from Ecology that the potential need for modified RTO emission limits will be considered as SVE gas data is collected and reported in the future.

> **Ecology Response**: As noted in the first response to comments in January of 2017, the sampling and analytical techniques required by this approval to determine quantity and content of the SVE gases oxidized by the RTO are robust. The 12 constituents identified in the approval order are those we expect in largest concentration and so, those that are most useful to limit specifically. Bulk VOC (the 12 constituents and all the rest that can be measured by the reference method) is covered by the VOC DRE and mass emission limit. No change is made to the Approval Order on the basis of this comment.

Comment 5. RTO/SVE Flow Rate. The new Preliminary Determination authorizes a maximum Zone A SVE gas loading rate to the RTO of 1000 standard cubic feet per minute (scfm). In its prior comments, Basin asked Ecology to describe how it determined that the SVE system can be safely operated at a flow rate of 1000 scfm without posing potential risks to human health and the environment. Basin also asked for a description of the topics and results of any consultations between AQP and TCP regarding SVE system flow rate limitations. To clarify, Basin's comment in this regard was not directed solely at health and environmental risks from RTO operations (i.e., air emissions) but instead also encompasses concerns about other health and environmental risks posed by operation of the SVE system at such a high flow rate. Subject to this clarification, Basin reiterates its prior comment.

The revised TSD states that "SVE gas flows, currently at about 400 scfm, cannot be increased significantly without exceeding limits established to avoid subsurface combustion problems (subsurface temperature and CO limits)." Basin appreciates Ecology's recognition that increased SVE gas flows pose a risk of subsurface combustion at the Site. Basin adds that high subsurface temperatures induced by aggressive SVE operation pose a risk of increased contaminant releases from buried drums of industrial waste even if subsurface combustion is not present. In other words, high SVE system flow rates need not necessarily result in combustion in order to pose a risk to human health and the environment. Basin requests that Ecology identify any and all current limits on SVE gas flow that are currently in place to avoid subsurface combustion problems, including any subsurface temperature and CO limits.

SVE gas flows are currently higher than the 400 scfm contemplated in the revised TSD. The overall SVE

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[2] In response to Basin's prior comments, Ecology stated that the SVE gas "values used to develop the 'worst-case' analysis used in the 2014 NOC application . . . . were collected in 2012 during a period when the SVE system was operated more aggressively . . ." In response, Basin observes that the IWAG has indicated an intent to return to more aggressive SVE operations in the future.

flow rate is now just below 500 scfm, having been increased by the IWAG in February 2017 due to a concern about increased groundwater contamination measured at a Zone A monitoring well. Basin requests clarification of what process, if any, Ecology will require for approving additional increases in SVE gas flow rates proposed by the IWAG. The IWAG has recently represented to Ecology that it plans to operate the SVE system at an overall flow approaching the maximum flow rate allowed under the Preliminary Determination.

In addition, the Preliminary Determination allows for testing the RTO at flow rates up to or in excess of 900 scfm. The IWAG recently confirmed that it intends to conduct its initial RTO performance test at a flow rate of at least 900 scfm. Basin seeks confirmation from Ecology that any approved test flow rate would account for or comply with the combustion-related SVE limits discussed in the revised TSD.

Regarding Basin's prior comment concerning minimum SVE system flow rates, the purpose of that comment was to inquire with Ecology about potential RTO efficiency loss during low loading periods. Has Ecology evaluated whether the RTO must receive a minimum SVE gas flow rate in order to achieve a DRE and overall emissions that are protective of human health and the environment? If the health impacts of RTO emissions under a low flow rate scenario "will be very nearly equal to the health impacts of directly venting the SVE gases," as stated in Ecology's response to Basin's prior comments, Basin seeks confirmation that Ecology has thoroughly evaluated those impacts and determined that they do not pose a risk to human health or the environment.

> **Ecology Response**: The AQP Approval Order is concerned solely with RTO operations and those environmental and health risks resulting from those operations. The AQP has no jurisdiction over subsurface gas extraction rates, or clean-up strategies, or interim measures while ultimate cleanup is debated. Instead, we have taken worst-case or design values (1000 scfm is a design value) provided to us by the applicant and used them to develop the terms and conditions of RTO operation that our toxicologists agree will adequately protect public health. Limits to avoid Zone A subsurface combustion are not within the jurisdiction of the AQP. As we noted before, should the SVE gas concentrations drop below levels where the RTO demonstrates 98% DRE, the health risk of the emissions drops as well. This is the reason the DRE requirement does not apply once individual compound exhaust concentrations drop below 3 ppmv, and bulk VOC concentrations below 20 ppmv. Ecology has thoroughly evaluated the impacts of operating the RTO at low SVE gas concentrations. No change to the Approval Order is made on the basis of this comment.

Comment 6. MSW Landfill Flare. The revised TSD correctly states that SVE gases were formerly treated at the MSW Landfill flare operated at the Site by the Landfill Group. The Landfill Group provided this service to the IWAG, for 13 years, at no cost other than the incremental expense of six months' worth of supplemental fuel needed to ensure complete combustion of SVE gases in 2015.

The revised TSD also states that "[t]he municipal solid waste gases will be separated from the SVE gases and will continue to be combusted in the flare." Basin submits this comment to clarify that, since 2002, the limited landfill gas generated at the MSW Landfill has been collected and routed to the flare with a system of wells and pipes that is entirely separate from the Zone A SVE system and the pipe previously used to convey SVE gas to the MSW flare. Since October 2015, when the IWAG installed its original GCE RTO, no SVE gas has been sent to the MSW flare. No separation of the gas streams from these distinct areas of the Site is required upon installation of the new IWAG RTO.

In light of the original GCE RTO failure, the Landfill Group repeatedly offered to provide its MSW Landfill flare service to the IWAG again as a temporary measure while Ecology evaluates a Site remedy and any long-term need for either an SVE system or a new RTO. The IWAG declined these recent offers from the Landfill Group, choosing instead to proceed with the rental of a recuperative thermal oxidizer and with the purchase and installation of a new RTO. As such, the limited amounts of standard landfill gas generated at the MSW Landfill since October 2015 have been, and will remain, treated at the MSW Landfill flare by the Landfill Group, separately from the IWAG's treatment of SVE gas generated in the Zone A industrial waste area.

Ecology Response: This comment appears to be a statement not requiring a response.

Comment 7. RTO Testing, Monitoring, and Reporting Requirements. The new Preliminary Determination requires an initial performance test of the proposed RTO within two months of system startup. Again, Basin supports this requirement and agrees it is reasonable given the recent history of technical and operational flaws in RTO emission controls at the Site. In general, Basin also agrees with Ecology's requirement that SVE gas data be collected on a continuous or bi-weekly basis (depending on the parameter) and reported to Ecology on a monthly basis. However, Basin submits several additional questions and comments regarding RTO testing, monitoring, and reporting requirements:

First, Basin asks Ecology to confirm that all of the SVE gas constituents and compounds listed in the revised TSD appendix posted on Ecology's website will be measured on a bi-weekly basis and reported on a monthly basis under condition 3.d of the new Preliminary Determination. Alternatively, Basin asks Ecology to identify a complete list of SVE gas constituents and compounds that will be measured by the IWAG on a bi-weekly basis and reported to Ecology under the new Preliminary Determination.

Second, Basin asks Ecology to confirm that emissions of all of the constituents and compounds listed in the revised TSD appendix posted on Ecology's website will be measured for purposes of initial performance testing and subsequent annual performance testing under condition 4 of the new Preliminary Determination. Alternatively, Basin asks Ecology to identify a complete list of constituents and compounds that will be measured for purposes of RTO performance testing under the new Preliminary Determination.

Third, given the performance history of the GCE RTO, Basin believes more frequent performance testing should be required, at least for an initial period of time, while successful operation of the new RTO unit is demonstrated across a range of operating conditions and SVE system flow rates. Basin suggests that performance testing be conducted at least quarterly for a period of one year after the initial performance test and at least semi-annually for an additional one year period after the new RTO has been operating successfully for a year. Basin also recommends that an RTO performance test be performed any time the SVE flow rate is adjusted to a level that varies by more than 10% of the flow rate used during the most recent performance test.

Fourth, condition 3.d of the new Preliminary Determination suggests that the IWAG "may request changes" to certain monitoring requirements for the new RTO. Basin seeks confirmation that any changes to conditions 3 or 4 of the new Preliminary Determination will be communicated to the public and that the public will have an opportunity to comment on those changes after reviewing all pertinent data.

Ecology Response: The SVE gas constituents and compounds measured on a bi-weekly basis are dictated by the analytical method (8260). There has been no change to the list throughout this permitting effort. The reference to Condition 3.d is unclear. Yes, all of the constituents measured by 8260 will be measured during the performance testing. As we indicated in our first response to the request for more frequent testing, Ecology carefully evaluates the frequencies required in our approval orders. Things we review include the likelihood that performance of the control equipment will change significantly over the period between tests, and the cost of the testing. In my professional opinion, annual testing of the Anguil RTO will be sufficient. Any changes made to the testing required by this approval will only be made upon demonstration that they do not reduce the quality of the data we are collecting and that they do not relax conditions of this approval. No public involvement is necessary for that type of change. Should the permittee request a relaxation, that change will require an amendment to the approval order and associated public comment. No change is made to the Approval Order on the basis of this comment.

Comment 8. Lower Explosive Limit. The new Preliminary Determination includes at least one condition pertaining to the lower explosive limit (LEL) in SVE gas. Specifically, Condition 5.e requires that the IWAG prepare an Operations & Maintenance (O&M) manual for the new RTO that will specify "[a]ctions to be taken in the event of an SVE blower shut-down due to a 25% LEL exceedance." The revised TSD also refers to a maximum LEL threshold of 25%, noting that this threshold is a key difference between the new RTO and the GCE RTO in terms of reducing impacts of RTO emissions. However, it is Basin's understanding that the LEL threshold for the new RTO will be 40% rather than 25%. Basin seeks confirmation of this understanding and an explanation of whether and how this change in RTO operational parameters has been accounted for by Ecology in its evaluation of the new RTO and the associated permitting documents.

Ecology Response: 25 % of the LEL is the control point in excess of which the Anguil system will start correcting. Introducing more ambient air is one way the system can correct a high LEL %. Once the system reaches 40%, both the RTO and the SVE system shut down. The references to RTO shut-down in the O &M Manual have been changed to 40%.

Comment 9. Contingencies. The new Preliminary Determination prohibits introduction of SVE system vapor effluent to the RTO if the RTO bed temperature falls below 1600 degrees Fahrenheit, and it requires an interlock system that will prevent introduction of SVE effluent to the RTO in the event that RTO bed temperature falls below this minimum requirement. In addition, as discussed above, it is Basin's understanding that the RTO will automatically shut down if the Lower Explosive Limit (LEL) of SVE gas reaches 40%.

First, Basin recognizes and appreciates that the new Preliminary Determination requires the IWAG to submit an Operations & Maintenance (O&M) manual for the new RTO that will specify actions to be taken in the event that certain permit thresholds are exceeded. Basin suggests that this condition of the new Preliminary Determination also require a description of actions to be taken in the event of RTO emission limitation exceedances and/or other permit violations. In light of past operational problems with the GCE RTO, it would be prudent to develop contingencies for scenarios in which performance testing fails to demonstrate compliance with any or all of the requirements in Conditions 1 and 2 of the new Preliminary Determination.

Second, Basin seeks an explanation from Ecology regarding what actions will be required in the event that the RTO shuts down due to permit threshold exceedances and untreated SVE gas is therefore vented to the atmosphere. Has Ecology evaluated the potential health and environmental impacts of uncontrolled SVE system venting at a full range of potential SVE flow rates? Will Ecology require the SVE system to be shut down in the event of an RTO shutdown? Will emergency measures or other contingencies be put in place to alert nearby residents and businesses of uncontrolled SVE venting? Please describe what overall contingencies are in place for the treatment of SVE effluent during times when the proposed RTO automatically closes its vapor inlet due to operational limitations, and please describe how and when any such contingencies will be implemented, and at whose direction.

Ecology Response: Paragraph 2 of this comment requests that the AQP 'plan for failure' with specific consequences for the RTO operator should the RTO fail emission limitations. Ecology's enforcement actions are taken on a situational and case by case basis, not predetermined by our approval orders. The approval requires that the RTO operate any time the SVE system does. When the RTO shuts down the SVE extraction pumps must also (see e.g. Condition 1.a.). Untreated SVE gas will not be vented to atmosphere with the interlocks required by this approval. When the SVE system and the RTO system shut off due to LEL exceedances or low RTO temperatures, the plumbing between the SVE blower and the RTO will be full of untreated SVE gas. A pair of carbon canisters are to be used to purge the residual gases through. As this was a late development during the public comment period, it is not described in the approval order. It has been added to the O&M Manual requirements and the reporting section.

Comments 10 – 11: from PBS Engineering, received April 20, 2017

Comment 10: Condition 3.c. This condition requires that each SVE extraction point be sampled once every two weeks to determine the mass flow rate of 8260 target compounds. We request the determination of mass flow rate for compliance determination be performed using the sampling point of combined flow, which is labeled as SV-BRTO. This sampling point is downstream of where flows from the shallow, intermediate and deep wells combine upstream of the RTO.

You advised you would consider this approach if we could show the results would provide equivalent results to sampling each well. To make the demonstration, we would sample the SV-BRTO and the combined streams from each shallow and deep well cluster and each intermediate well every two weeks for a period of three months, and then provide a comparison of the results by each approach. We're proposing to sample the combined streams of the shallow and deep wells, since the combined stream from each shallow/deep well cluster, rather than each shallow and deep well, has recording flow meters.

That is, there are four recording flow meters. One for the VEW-6S and -6D combined flow, the VEW-7S and -7D combined flow, VEW-6I and VEW-7I. These flows are added to obtain the combined flow rate. For the three-month demonstration period, samples for 8260 analyses would be obtained at the system combined flow at SV-BRTO, from the combined VEW-6S and -6D flow, from the combined VEW- 7S and -7D flow, from VEW-6I and from VEW-7I. The total mass as determined from the 8260 results for each sample and the flows from each flow meter would be compared to the total mass obtained from the 8260 results for the sample from SV-BRTO and the combined flows of the four flow meters, and the

results would be reported to Ecology on a monthly basis, to support the request for compliance determination using the combined SV-BRTO sampling, with a summary comparison provided at the end of the three-month period.

> **Ecology Response**: As we advised when the combined flow monitoring concept was proposed, we agree that compliance of the RTO is best determined using the sample at SV-BRTO. This choice should be described in the source test protocol required for our review prior to any compliance tests. TCP, however, requires the data collected from each SVE extraction point. Also as we suggested when we discussed this, all samples should be collected every two weeks for the first year of RTO operation. After that period, we can consider reducing the frequency and also potentially, reducing the number of sampling points. We have not changed the approval order for this comment.

Comment 11: Purging Of Header Line After High LEL Shutdown. As we noted in our call, we will need to purge the header line if a high LEL shutdown ever occurred. Attached is a description of the planned LEL monitoring and control system and the proposed approach that would be used to purge the header in case of a high LEL shutdown. The proposed approach would use two carbon canisters in series. We request that the final NOC authorize as needed use of this carbon units and the purging operation.

> **Ecology Response**: Ecology agreed that purging the header line should be done using carbon to prevent the release of untreated gases. This activity should be included as part of the operations and maintenance manual required for the RTO and ancillary systems. PBS must include documentation that one of the canisters of the two in series is sufficient to capture the worst-case mass of SVE constituents. The O&M manual should describe the replacement of the first canister in series after each purging event. If it is demonstrated that concentrations in the SVE gas have declined sufficiently from worst-case, the size of the canisters or the frequency of replacement may be re-evaluated. Please note that, to date, Ecology has been provided no design information for our authorization as suggested in this comment. We have not changed the approval order for this comment.