Dear Curt Campbell,

We have reviewed the plans for the referenced permit application. The project proposes the use of extended detention, bioretention, and vegetated filter strip, to meet the Performance Standards established by LCRA's Highland Lakes Watershed Ordinance. We have the following comments regarding the plans and application:

1. Public Notice
   a. Mailed Notice: Provide a statement signed by the applicant certifying that each owner has been sent a notice of the application by first class mail.

      U1 – Comment cleared.

2. Financial Security
   a. Changes to the Erosion and Sedimentation Control Plan have been requested. Please revise the cost estimate to include these changes. Once the cost estimate is approved, a letter of credit or other form of financial security acceptable to LCRA must be submitted prior to issuance of a permit. Letter of Credit shall have a minimum expiration of 3 years or shall renew automatically until LCRA determines that the project has achieved final stabilization. Contact this reviewer for a template for the letter of credit.

      U1 – Comment pending, additional changes to the Erosion Control Plan requested.

3. General Requirements
   a. Include a slope map at the same scale as the water quality management plan, depicting slope categories of 0-5%, 5-20%, and over 20%.

      U1 – Comment cleared.

   b. Provide design information for the access roads within the property.

      U1 – Include roadway design information in the plans. Include the future pavement section as well if pavement is proposed. Provide design information for the boat ramp, the slope of the boat ramp (>10%) poses an erosion risk, provide permanent stabilization beyond gravel base. Include permanent stabilization information for the roadway embankments based on these designs. Also, include notes on the watering schedule for dust control.

   c. Please separate the construction plans from the report and create a stand-alone construction plan set.
d. Once the dredging operation is complete, will the plant be removed from the site? If so, please provide a plan to demobilize and restore the site.

U1 – If the ponds are to stay permanently who will manage the long-term maintenance once the rest of the site is restored? The ponds can be restored with the rest of the site if desired.

e. Label the drainage area sizes in acres where shown on the plans.

U1 – Comment cleared.

f. Provide drainage calculations for all drainage areas shown on the plan.

U1 – Comment cleared.

g. Provide additional existing elevation callouts throughout the plans around all proposed development for reference.

4. Erosion/Sediment Control

a. Please provide revegetation plans and include these costs in the Letter of Credit. A restoration plan for all disturbed areas on the site that includes seed, sod and mulch type and rate of application; application technique; watering and fertilization schedule; and criteria for acceptance of revegetation is required.

U1 – Specify seed, sod and mulch type, and rate of application, application technique, water and fertilizing schedule on the Reclamation Plan.

b. In the sequence of construction specify all temporary BMPs (silt fence, rock berm, etc.) need to be installed before any construction activities can begin. Silt fence needs to be in place before earthen berms are constructed.

U1 – Specify in the sequence of construction item #1 that the limited clearing for installation of temporary erosion controls shall be held to a maximum of 15 feet wide.

c. Please depict the Limits of Construction line, location of all access roads, haul roads, equipment storage areas, and spoil and topsoil stockpile areas on the temporary erosion control plan.

U1 – Limits of construction is not defined on the plans.

d. Provide sizing calculations for the proposed channel that drains to the extended detention basin. Include flow, normal depth, and velocity of flow in the channel. If erosive velocities are expected provide additional erosion controls for mitigation.

U1 – Comment cleared.

e. Provide grading and details for the proposed earthen berms throughout the project.

U1 – Comment cleared.

f. Provide sizing and design information for the proposed culvert under the access road.

U1 – size the crossing so that the 100-yr 24-hr flow does not overtop the road or design the road as a low water crossing to prevent the gravel base road from washing out during storm events in this location. Provide permanent stabilization at the outfall of the culvert based on the velocities found in the 100-yr flow calculations. Rip Rap rock size and apron size needs to follow HLWO requirements found at the link below.

g. Include the sequence of construction on the Erosion Control Plans.

U1 – Comment cleared.

h. Install rock berms rather than silt fence at all locations where concentrated flows are to be encountered, pond outfalls, culvert outfalls, etc.

U1 – Comment cleared.

i. Include the following note on the plans: Buffer zones shall remain undisturbed except for crossings shown on these plans. Refer to creek crossing details and notes for construction in creeks.

U1 – Include the creek crossing details found in the HLWO Technical Manual Appendix 2.7.1 in the plans.

j. Include notes for construction within creeks per Appendix 2.7.3 of the Technical Manual.

U1 – Comment cleared.

k. The seed mixture quantity in the Engineer’s Erosion Control Cost Estimate needs to reflect the entire limits of construction. Revise the quantity to reflect this.

U1 – Comment cleared.

l. The fee for the water truck rental does not account for all the watering requirements as outlined in the water application assumptions “watering occurs every two weeks for the first three months, followed by once monthly until the vegetation is established, approximately six months total”.

U1 – Comment cleared.

m. On the Erosion and Sediment Control plans provide existing topo for the entire limits of the drainage areas.

U1 – Comment cleared.

n. The bioretention facility may not be used for construction phase runoff since it utilizes infiltration. Refer to HLWO Sec. 4.2.1 General Design Guidelines item (5).

U1 – Specify in the Sequence of Construction when the bioretention pond is to be installed. The bioretention pond needs to be installed after construction grading activities have ceased and have been stabilized for daily processing plant operation.

o. U1 – Include additional erosion controls around the proposed settling ponds.
5. Water Quality Management

   a. Please identify proposed vegetated buffer areas and mechanism for achieving sheet flow through buffer areas.

      U1 – Comment cleared.

   b. Verify that the sediment forebay volume is equal or greater than 25% of the total water quality volume.

      U1 – Comment cleared.

   c. Provide details/specifications for the gabion divider separating stage 1 and 2 of the extended detention pond.

      U1 – call out the height of the gabion divider on the plans.

   d. Provide calculations for apron and rock size for all proposed rock rip rap. Include installation details for rip rap.

      U1 - Extend the rip rap to the width of the flow coming from the overflow spillway. Call out the apron dimensions on the plans.

   e. Specify the soil profile for the extended detention basin. Separate the notes to specify what soil and vegetation requirements are meant for each pond.

      U1 – The soil profile provided is for the biofiltration pond. Please provide soil profile notes for the extended detention pond. Notes can be found in the HLWO Technical Manual Section 4.2.3 (8).

   f. Natural vegetated filter strips require a slope of less than 12%, revise grading to be less than 12% maximum.

      U1 – There are areas shown on the plans as natural vegetated filter strips that are over the maximum 12% slope. Please revise.

   g. Specify in the plans that the natural vegetated filter strips require an average soil depth of 4” and that sheet flow will be achieved prior to entering the filter strip.

      U1 – Include Figure 4-14: Natural Vegetative Filter Strip from the HLWO Technical
h. The pond outfalls will need to be reduced back to sheet flow before discharging into the buffer zones.

U1 – Size the flow spreader per Equation 2.11 of the HLWO Technical Manual. Show the extents and proposed grading of the level spreaders on the plans.

i. Label existing contours on the pond detail sheets.

U1 – Comment cleared.

j. Show the location of the level spreaders on the plans, provide grading information and design details for all level spreaders proposed.

U1 – Level spreaders are used to convert concentrated runoff into sheet flow and release it uniformly onto areas stabilized by existing vegetation. In areas where runoff naturally sheet flows across the filter strip the level spreader is not required. Also, note that level spreaders should be placed at a constant elevation across the entire length of the BMP. Refer to HLWO Technical Manual Section 3.2.6 for design requirements and applicability of level spreaders.

k. Provide sizing information for the proposed settling ponds. Show that they are sized to not overflow during a 100-yr 24-hr storm event.

U1 – Provide details for the proposed outfall at each settling pond. Include locations of primary and secondary spillway, inverts of outfalls, call out the 100-year water surface elevation in each pond profile. Provide construction details for all aspects of the pond outfalls.

l. What size are the drain-pipes connecting the settling ponds? How will these drains be maintained to prevent clogging with sediment?

U1 – Provide construction details for the proposed weir plates for each pond. What is the design drawdown time in each pond? Where is the weir plate located? Provide construction details for the weir plate construction and installation.

m. The water quality depth for the bioretention pond is listed as 854, the volume of the pond needs to be based on the storage above the filter media.

U1 – Comment cleared.

n. U1 – Specify the location of the PVC cap with orifice on the plans. The note on the detail is incorrect. The orifice cap should be installed at the outfall of the extended detention basin (inflow to the bioretention basin. Specify the rip rap sizing shown on the plans at this outfall location.

o. U1 – The Detail 2 callout on Sheet C3.0 refers to Sheet B1. There is not a Sheet B1 included in the plans.

p. U1 – As an alternative to an extended detention basin discharging to a bioretention basin, please consider the practice of biofiltration. Design criteria can be found at this location and details and other guidance can be found here.

q. U1 – The construction plans indicate that stormwater runoff will be co-mingled with industrial processing water and discharged into Lake LBJ. Please divert stormwater runoff around the proposed industrial processing ponds to prevent potential overflows and discharges to Lake LBJ. Please update the plans to better define the design storm events (it appears that the 100-year modeling is using the 10-year storm data), riser structure/weir overflow design approach and details, storm drain outfall design in a non-erosive manner, and hydrologic routing between the three proposed industrial processing ponds. It appears that the industrial pond routing analysis did not consider the inflow from
the proposed sand and gravel processing plant that could keep the basins full during operations, thus, having no available storage volume for stormwater runoff, thus, the need to divert stormwater runoff around the process water ponds.

r. U1 – Provide construction details for settling pond outlet return pipe. Include pipe size, slope of pipe, velocity at outfall, outfall end treatment design, permanent erosion control at outfall, etc.

s. Provide BMP easements for the proposed Extended Detention and Bioretention ponds. BMP easements will need to have the restrictions set forth in the Permanent Water Quality BMP Easement Plat Note in Appendix 1.11 of the HLWO Technical Manual. These easements will need to be recorded with the county. Provide a draft copy of the easements for review/approval by LCRA before recordation.

6. Maintenance Plan

a. Separate the Maintenance Plan from the Engineering Report and provide as a stand-alone document.

   U1 – Comment cleared.

7. Land Ownership

a. Please provide an authorization letter, copy of land lease, deed, and other forms of proof of ownership for all project aspects including ingress/egress easements and sand processing plant operations. Please provide supporting maps to illustrate land ownership/leases.

   U1 – If proof of ownership or control of the property within the scope of the application is a lease, please provide documentation demonstrating authority of lessor to lease the property.

If you have any questions about these comments, please call me at (512) 578-7633, or by e-mail at blake.allison@lcra.org.

Additional information addressing these comments or revised application materials must be provided within 30 calendar days from the date of this letter. An extension of time to provide information may be requested, however the cumulative amount of time to provide additional information may not exceed 6 months from the date that the application for permit was filed.

Thank you,

Blake Allison
Water Quality Protection