# DRA REPONSE TO MOTION FOR RECONSIDERATION

# **EXHIBITS**

# **EXHIBIT** A

# **REDLINE DOCUMENT SHOWING APPLICANT'S PROPOSED CHANGES TO THE KEYSTONE XL FINAL ORDER**

## Condition 20(a)

Keystone shall use floating sediment curtains to maintain sediments within downstream of the construction right of way in lieu offlowing streams, if appropriate. On the construction ROW, silt fences may be used to augment straw bales when the depthin areas of high erosion potential. Keystone shall use sediment curtains in non-flowing water exceeds the height of straw bales or silt fence installation.streams where appropriate.

## **Condition 43**

In accordance with Application, Section 6.4, Keystone shall follow the "Unanticipated Discoveries Plan," as reviewed by the State Historical Preservation Office (SHPO) and approved by the Department of State and provide it to the Commission upon request. Ex TC-1.6.4, pp. 94-96; Ex S-3. If during construction, Keystone or its agents discover what may be an archaeological resource, cultural resource, historical resource or gravesite, Keystone or its contractors or agents shall immediately cease work at that portion of the site and notify the affected landowner(s)DOS and the State Historical Preservation Office. If the DOS and SHPO determinesdetermine that a protectable significant resource is present, Keystone shall develop a plan that is acceptableapproved by the DOS and commenting/signatory parties to the SHPOProgrammatic Agreement to salvage, avoid or protect the archaeological resource. If such a plan will require a materially different route than that approved by the Commission, Keystone shall obtain Commission and landowner approval for the new route before proceeding with any further construction. Keystone shall be responsible for any costs that the landowner is legally obligated to incur as a consequence of the disturbance of a protected cultural resource as a result of Keystone's construction or maintenance activities.

## **Condition 44**

Keystone shall implement and comply with the following procedures regarding paleontological resources:

a. Prior to commencing construction, Keystone shall conduct a literature review and <u>records</u> <u>search</u>, and consult with the <u>BLM and</u> Museum of Geology at the SD School of Mines and Geology to identify known fossil sites along the pipeline route and <u>areas where the probability is highidentify locations</u> of <u>encounter during construction surface exposures</u> of <u>fossils of scientific</u> <u>or economic significance</u> <u>paleontologically sensitive rock formations using the BLM's Potential</u> <u>Fossil Yield Classification system</u>. Any area where trenching will occur into the Hell Creek Formation shall be considered a high probability area.

b Keystone shall at its expense conduct a pre-construction field survey of each area

identified by such review and consultation as a known site or high probability area within the construction ROW. Following BLM guidelines, areas with exposures of high sensitivity (PFYC Class 4) and very high sensitivity (PFYC Class 5) rock formations shall be subject to a 100% pedestrial field survey, while areas with exposures of moderately sensitive rock formations (PFYC Class 3) shall be spot-checked for occurrences of scientifically significant surface fossils and evidence of subsurface fossils. Scientifically significant surface fossils shall be avoided by the Project or mitigated by collecting them if avoidance is not feasible. Following BLM guidelines for the assessment and mitigation of paleontological resources, scientifically significant paleontological resources are defined as rare vertebrate fossils that are identifiable to taxon and element, and common vertebrate fossils that are identifiable to taxon and element and that have scientific research value; and scientifically noteworthy occurrences of invertebrate, plant and trace fossils. Fossil localities are defined as the geographic and stratigraphic locations at which fossils are found.

c. Following the completion of field surveys, Keystone shall prepare and file with the Commission a paleontological resource mitigation plan. The mitigation plan shall <u>specify</u> <u>monitoring locations, and</u> include a trained on-site monitor in high probability areas-monitors and proper employee and contractor training to identify any paleontological resources discovered during construction and the procedures to be followed following such discovery. In all Paleontological monitoring will take place in areas where the trench will be located within the construction ROW that are underlain by rock formations with high sensitivity (PFYC Class 4) and very high sensitivity (PFYC Class 5), and in the Hell Creek Formation, Keystone shall, if requested by the landowner, utilize a trained on-site paleontological monitor, which may be the environmental monitor if trained in paleontological resource identificationareas underlain by rock formations with moderate sensitivity (PFYC Class 3) where significant fossils were identified during field surveys.

d. If during construction, Keystone or its agents discover what may be a paleontological resource of scientific or economic significance, as defined in subparagraph (b) above, Keystone or its contractors or agents shall immediately cease work at that portion of the site and, if on private land, notify the affected landowner(s) or if on landowners. Upon such a discovery, Keystone's paleontological monitor will evaluate whether the discovery is of scientific significance as defined in subparagraph (b) above. If a scientifically significant paleontological resource is discovered on state or federal land, Keystone will notify the Museum of Geology at the SD School of Mines and Technology- (SDSM), and if on federal land, Keystone shall, upon discovery, turn over any fossils in its possession to the owner of will notify the land from which excavated or, if on state or BLM or other federal land, the Museum of Geology and agency. In no case shall not-Keystone return any excavated fossils to the trench. If a qualified and BLMpermitted paleontologist, in consultation with the landowner, BLM, or Museum of GeologySDSM determines that a valuablescientifically significant paleontological resource is present, Keystone shall develop a plan that is reasonably acceptable to the landowner(s), BLM, or Museum of GeologySDSM, as applicable, to accommodate the landowner's, BLM's or Museum of Geology's the SDSM's salvage or avoidance of the paleontological resource at their the expense of the landowner, BLM, or the SDSM, to avoid and protect the resource. If such a plan will require a materially different route than that approved by the Commission, Keystone shall obtain Commission approval for the new route before proceeding with any further

construction. Keystone shall, upon discovery and salvage of paleontological resources either during pre-construction surveys or construction monitoring on private land, return any fossils in its possession to the landowner of record of the land on which the fossil is found. If on state land, the fossils and all associated data and documentation will be transferred to the SDSM; if on federal land, to the BLM.

# **EXHIBIT B**

Description	Instream sediment trapping devices include both floating materials (turbidity curtains) anchored to the watercourse bottom and instream sediment collection mats that run along the watercourse bottom (Sedimat <sup>TM</sup> ). These materials are specifically designed to limit sediment transport impacts within a body of water. Turbidity curtains are floating silt fences that allow water to pass through but retain soil particles and other debris. Depending on the curtain's permeability, they can also slow the flow of water enough to give sediment time to settle.		
Applications	To provide sedimentation protection for in-stream, bank, or upslope ground disturbance or from dredging or filling within a waterway. Practice applies within a flowing watercourse, lake, or other area of water impoundment or flow that has aquatic resources needing protection. Also applies when runoff occurs close to rivers, streams, lakes, reservoirs, or when construction projects take place on or under water.		
Limitations	Drainage area – N/A Minimum bedrock depth - N/A NRCS soil type – N/A Drainage/flood control – N/A	Maximum slope – N/A Minimum water table - N/A Freeze/thaw – N/A	
	Turbidity curtains should not be installe specifically engineered to stop sand bar appropriate local, state and/or federal au	d across streams unless they are creation and are approved by thorities.	
Targeted Pollutants	Sediment		
Design Parameters	<ul> <li>These BMPs are designed and selected for specific flow conditions. For sites with flow velocities or currents greater than 5 ft per second, a qualified engineer and product manufacturer should approve of the use.</li> <li>Materials should be of strong, heavy-weight materials that have ultraviolet light (UV) inhibitors. The tensile strength should be sufficient to withstand predicted flows. All material seams and line attachments should be sewn or vulcanized welded into place. Materials should be of bright colors, when applicable, to attract attention of boaters or swimmers using areas near the work site. Flotation devices for turbidity curtains should be flexible, buoyant units contained in an individual flotation sleeve or collar attached to the curtain.</li> <li>Shoreline turbidity curtain anchors and instream sediment mat anchors for turbidity curtains should hold the curtain in position and may be any of the following anchor types: plow, fluke, mushroom, or a grappling hook. All instream anchors should have a floating anchor buoy or other identifying mark</li> </ul>		

	This is a partial listing of some of the proprietary products available:
	<ul> <li>Brockton Equipment markets and customizes the Siltdam in a number of ways. Vinyl-cased polyethylene flotation logs are attached to a skirt of woven polypropylene, and the skirts are available in different permeabilities and lengths. A sealed pocket at the bottom of the skirt holds a galvanized steel chain for ballast.</li> <li>Indian Valley Industries produces turbidity curtains to specification, depending on water-flow rate, depth of channel, desired filtering properties and, if necessary, tide action. The 50-ft standard curtains have grommets along the bottom skirt edge so they can be anchored to the channel bottom.</li> <li>The SiltMaster, a floating turbidity curtain manufactured by Parker Systems Inc. of Chesapeake, VA, comes with various skirt lengths. Similar to the Siltdam, it has a chain ballast at the bottom of the skirt. The skirt is of either a permeable geotextile fabric to allow water but not silt to pass through or, if specified, an impermeable vinyl or urethane-coated fabric.</li> </ul>
Construction Guidelines	<ul> <li>For manufactured products, install as per manufacturer's instructions.</li> <li>Turbidity curtains should be installed parallel to flow of the watercourse allowing for 10 to 20% variance in the straight-line measurements. Allow for at least 50 ft between joints in the curtain and no more than 100 ft between anchor or stake locations.</li> <li>Instream sediment mats can be aligned either direction along the watercourse bottom, as long as upstream mat overlaps the downstream mat (like a drainage ditch erosion control blanket installation). Ensure the upstream edge is firmly trenched in to prevent flows from going under the mat. Mats should cross the entire stream and be staked or use stones to keep the mat in place. Follow the manufacturer's specifications for length of mat needed for the site's flow rate.</li> <li>Turbidity curtains should extend the entire depth of the watercourse. In significant wind or wave action areas a 10- to 12-ft depth is the most practical due to fabric and mooring anchor strain from the heavy-water and sediment loads.</li> <li>Soils should be allowed to settle for a minimum of 6 to 12 hours prior to BMP removal and cleaning. All cleaning operations should also use good sediment control practices. Consider sizing materials adequately to allow for maintenance only prior to removal, and not throughout project.</li> <li>In areas heavily impacted by wind generated wave action; turbidity curtains should have slack to follow the rise and fall of the water level without submerging. Curtains should also maintain adequate flow through, usually by using heavier woven fabric from the bottom sections of the curtain.</li> <li>Setting the upstream anchor points first, then unfurling the fabric and letting the flow carry the fabric downstream or to vertical position achieves best installation.</li> </ul>

## Maintenance Removal

Follow manufacturer instructions for fabric and material repair.

- All materials should be removed at low flows and in such a fashion as to scoop and trap sediments within the fabric. The removal area should be clear of any obstructions that could tear the fabric. For mats, consider rolling up from the downstream end to trap silts in the mat roll. For curtains, consider pulling the bottom line and top lines in together like a parachute to pull soils ashore.
  - Spoils should be dewatered and reused on a nearby bank or upland area needing additional fill. Controls should be in place to ensure that the sediment does not re-enter the waterway.

<b>ACTIVITY:</b> Floating	Sediment Curtain	ES – 27		
		City of Hormshild Backby County, To Storm Water Matters!		
	Targeted Constituents			
Significant Be	enefit   Partial Benefit	O Low or Unknown Benefit		
Sediment O H     Nutrients O T	Toxic Materials     O     Floatable Materials     O       Toxic Materials     O     Oil & Grease     O	Oxygen Demanding Substances       Bacteria &       Viruses       Wastes	on	
<b>Description</b> A floating sediment curtain is used within a stream, river, or lake as a last line of defense to capture sediment and silt. It can also be used in a sediment basin or a settling pond to ensure adequate capture of sediment and silt. A floating sediment curtain will significantly reduce sediment in critical areas such as streams, rivers, and aquatic habitats.				
Suitable Applications	<b>Suitable</b> Adjacent to banks where construction, grading or excavation will take place up to the edge of water or within the body of water.			
<ul> <li>Within a temporary sediment basin or a settling pond to assist in capture of sediment and silt.</li> </ul>			of	
	<ul> <li>For dredging projects.</li> </ul>			
<b>Approach</b> A floating sediment curtain is made from a heavy geotextile fabric, typically 16 to 20 ounces per square yard, with sufficient properties to capture most types of silt and sediment. Floatation is often achieved by Styrofoam or other very light material that will not degrade in water. Geotextile panels are reinforced and sewn to include the flotation material, chains, hooks, and other connection equipment as needed. Geotextile fabric should have ultraviolet inhibitors and adequate strength to match the application without failing.			16 ery ed on nd	
Any type of construction or project that takes place within "Waters of the State" is regulated by the Tennessee Department of Environment and Conservation (TDEC). The usual definition for Waters of the State is any blue-line stream that is shown on a U.S. Geological Survey quadrangle map, or any point downstream from where the blue-line stream begins, including lakes, ponds, and wetlands. See TDEC Web site for additional information on requirements for an Aquatic Resource Alteration Permit (ARAP), which must be obtained prior to construction, clearing, grading, or any other disturbance near a body of water.			te" on am int ds, nts ior of	
http://www.state.tn.us/environment/permits/				
Memphis and Shelby County Erosion & Sediment	BMP Manual ES-27-1			

ACTIVITY: Floating Sediment Curtain	ES – 27
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Floating sediment curtains are not intended for use across flowing streams or rivers.

Although this may appear to be the easiest way to anchor a floating curtain, it is not designed to filter large quantities of flowing water nor can it resist the large forces involved. Floating sediment curtains should not be placed across navigation channels, streams with fish or other migrating aquatic life, or recreational streams.

Floating sediment curtains are commercially available with adequate sizes and strengths for almost any application. Follow manufacturer's recommendations and design guidelines when using these products. In most instances, installation will require boats and anchoring hardware for which an experienced subcontractor is recommended.

## Design Considerations

Curtains should generally extend from the water surface to the bottom of the channel, with a reasonable effort to match the bottom profile of channel. Typically allow 10% extra depth for the curtain, and fold the extra depth toward the land side of the curtain. Allow 10% extra length to allow for some curtain flexibility, anchoring points, current, etc.

The choice of whether to use a pervious material (geotextile filter fabric) or an impervious material (nylon reinforced vinyl) depends on the type of silt or sediment expected. A pervious material will allow small amounts of water to pass through, but is generally insufficient to allow a moving stream to pass through.

Curtain joints (as shown in Figure ES-27-1) are typically 50 to 100 feet apart, which allows for flexible deployment choices, easier storage, and reduced stress on the fabric. The alternate connection detail is for situations that have moving water or other stresses, or to assist in anchoring. In general, the curtain should be anchored or staked at every joint using built-in fasteners and loops.

The floating sediment curtain should generally be made of bright colors, such as yellow or orange, for visibility or the curtain should have buoys or floats attached to increase visibility. The floating sediment curtain should have at least 3" freeboard above the water surface. The type and size of buoyant material should be computed to offset the weight of curtain, including the fabric, ropes, chains, and other fasteners used.

# Maintenance ■ Inspect floating sediment curtain daily to verify that silt and sediment are not bypassing the curtain. Repair or replace curtain as necessary, using materials and methods recommended by the geotextile manufacturer.

ACTIVITY: Floating Sediment Curtain	ES – 27
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In shallow areas, trapped sediment can be more easily removed than in
deep waters. If the curtain has some excess length, it may be possible to
carefully raise the bottom edge by swinging it slowly upstream and
raising it. Otherwise, equipment with appropriate bucket attachments can
be used. It may be less harmful to leave sediments in place than to dredge
and remove them.

- **Limitations** A floating sediment curtain is the last line of defense in controlling sediment. Use silt fence or straw bale barriers up to the edge of water. Silt fence can be installed in shallow water less than 1' deep, and may be adequate to replace a floating sediment curtain for some situations.
  - Floating sediment curtains usually require design and installation by an experienced subcontractor. They are manufactured commercially and are highly recommended.
  - Floating sediment curtains are not intended for petroleum spills, chemical spills, or other instances of floating liquids. Use an absorbent boom specifically made to capture the type of spilled liquid.

**References** 45, 115, 141 (see BMP Manual Chapter 10 for list)



# **BMP: Flotation Silt Curtain**



### **DESCRIPTION:**

A flotation silt curtain is a silt barrier for use within a lake or pond. The flotation silt curtain consists of a filter fabric curtain weighted at the bottom and attached to a flotation device at the top. This structure is used to isolate an active construction area within a lake or pond to prevent silt-laden water from migrating out of the construction zone.

#### **APPLICATIONS:**

Where construction is conducted within a lake or pond area.

#### INSTALLATION/APPLICATION CRITERIA:

- The curtain should be constructed of a nylon fabric with a minimum tensile strenth of 300 pounds per inch of fabric.
- The top of the curtain should have a flotation carrier consisting of a floating plastic tube (6-inch minimum diameter) filled with marine quality polyethylene foam. The flotation carrier should also have a 5/16" diameter coated steel cable in it to carry loads imposed upon the curtain.
- The bottom edge should be weighted by cable or chain with a minimum weight of 1.1 pounds per foot.
- One 24-pound anchor should be used per 100 feet of curtain.
- Where the curtain is made up of sections, the sections should be joined so that silt cannot permeate through the connection.

#### LIMITATIONS:

Not recommended in very shallow water bodies.

#### **MAINTENANCE:**

The silt curtain should be maintained until the construction area is stabilized and turbidity is reduced to acceptable levels.

#### OBJECTIVES

**FSC** 

□ Housekeeping Practices
 ⊠ Contain Waste
 □ Minimize Disturbed Areas
 □ Stabilize Disturbed Areas
 □ Protect Slopes/Channels
 ⊠ Control Site Perimeter
 ⊠ Control Internal Erosion



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#### TARGETED POLLUTANTS

Sediment

- □ Nutrients
- □ Toxic Materials
- 🗆 Oil & Grease
- Floatable Materials
- □ Other Waste

High Impact
Medium Impact
Low or Unknown Impact

#### IMPLEMENTATION REQUIREMENTS

Capital Costs
 O&M Costs
 Maintenance
 Training

# **EXHIBIT C**









and coastal development of new infrastructure like hotels and residential developments globally.

Made from high quality marine grade components and optional permeable filter (geotextile) or standard impermeable skirt fabric systems.

Are you looking for <u>"hot deals"?</u>



Type 3 Silt Curtain is built to suit our clients project requirements. We consider wind, waves, water velocity, layout and scope of project to determine the best suited anchoring pattern, skirt depth and materials for best performance.

Additionally we support our clients by doing site visits, and discussing most applicable systems with all parties to ensure complete satisfaction.

**Questions?** Whether you need a silt barrier 3 foot or 100 foot deep, hung from a barge or submerged, we can help. **Call us @ (+1) 772-646-0597.** 

<u>Type 3 Silt Barrier (top of page)</u> - <u>Silt Barrier Type 2</u> - <u>Silt Barrier Type 3</u> - <u>Silt Barrier Contact Us</u> - <u>Silt Barrier Quote Request</u> - <u>Sitemap</u> - <u>Homepage</u>

Homepage	Quote Request	SILT BLOG
Project Postings	Type 1 - Calm	Type 2 - Medium
Type 3 - Rough	Staked Silt Barrier	Policies

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