City of Mission Hills, KS

Best Management Practices Manual for land disturbance activities and storm water, erosion, and sedimentation control

Purpose of the Land Disturbance Ordinance:

The Land Disturbance Ordinance was adopted by the City of Mission Hills to eliminate or limit erosion and changes to storm water drainage areas, as well as eliminate the introduction of sediment and pollution from construction sites and disturbed land into the city's storm sewers, streets, creeks, and adjoining properties. Adoption of the ordinance was necessitated by the EPA's Clean Water Act. Ordinance 1221 can be obtained at City Hall, or can be viewed on the City's web site.

When considering activities that will cause a land disturbance you must consider the suitability of existing site conditions. Encourage the development's features to follow natural contours. Steep slopes, areas subject to flooding, and highly erodible soils severely limit a site's use. Level, well-drained areas with stable soils offer few use restrictions. Any disturbance of or modification to a site's drainage features or topography requires protection from erosion and sedimentation. Contractors and property owners are encouraged to establish finish grade and re-establish vegetation as early as possible to minimize the necessity for Best Management Practice (BMP) control measures.

Contractor's (or owner's) responsibilities:

Contractor is responsible for obtaining a land disturbance permit if required, and is responsible for all necessary training and qualification of subcontractors to properly install and maintain control measures. Failure to obtain a required permit before work begins will result in issuance of fines. Contractor is required to obtain all required inspections, *such as a pre-disturbance inspection and inspection of installed control measures*. Contractors must take all measures necessary to reduce erosion and sedimentation resulting from disturbance of earth or addition of fill material during the entire length of the project. Control measures must be satisfactorily maintained by the contractor for the length of the project, and may be added to or modified as deemed necessary by city inspectors.

Best Management Practices:

The following BMP's are measures to control erosion and sedimentation, and are *suggestions only*. A full list of BMP's is available online, and *any BMP can be required at the city's discretion depending on a project's specific circumstances and regardless of any BMP measures already in place. If site-specific circumstances warrant, evaluation by an environmental/soils/storm water engineer may be required.*

BMP's should be installed as close as possible to disturbed area to minimize the area's erosion, storm water flow, and sedimentation onto undisturbed areas, streams, and storm sewers. Depending on site conditions (typically involving steep slopes or properties adjacent to streams or channels), multiple BMP's may be required as an additional means to prevent passage of sediment.

- **Temporary construction entrance/parking area:** *Required on all new home sites*. A stabilized stone pad consisting of gravel at areas of vehicular egress, ingress, and parking on a construction site. Various gravel products such as ½ or ¾" gravel and AB3 can be used, and an optional geo-textile filter fabric can be installed to minimize passage of mud and silt into the gravel. Intended to minimize impact to site and to minimize introduction of sediment to city streets and storm water system.
- **Silt fence**: Woven synthetic fabric silt fence can be installed to control sediment and erosion. Silt fence shall be properly staked, trenched, and backfilled to prevent passage of sediment.
- **Straw bales/Straw Wattles/Straw Logs**: Bales of straw may be placed to control sediment in lieu of or in addition to silt fence. Staking of bales will be required if slope or site conditions necessitate it. Bales must be firmly seated or trenched to prevent erosion beneath them. Straw wattles or straw logs can be used as perimeter control on disturbed areas of ¼ acre (10,890sf) or less, and can be incorporated as check dams in swales and slopes.
- **Hydraulic mulch/Tackifiers/Soil Binders**: Sprayed products containing processed organic material such as wood and paper products, cotton, straw fibers, or chemical stabilizers can be used to stabilize graded sloped earth.
- **Compaction**: Stockpiles of earth can be stabilized by compaction with machinery. Depending on size, slope, and lot conditions, additional control measures may be required.
- **Vegetated buffers/Vegetated stream buffers**: Depending on site conditions, large strips of well-established vegetation (grass, ground cover) can be left in place between disturbed area and adjacent property or streams to assist with sediment control.
- **Interception ditch/Retention basin**: A graded ditch or depression for collection and retention of excess storm water.
- **Berm**: Berms or ridges of earth may be constructed to direct the flow of surface water to collection areas or control measures such as silt fence or hay bales. A berm, **slope break**, or **check dam** can also be used to break the continuity of a slope to reduce the potential for erosion due to runoff velocity.
- **Buffer**: A strip of land where vegetation, mulch, hay bales, or other BMP is maintained or placed where it can intercept and prevent upland sediment and other pollutants from flowing into water, the storm water system, or onto another property.
- **Chute**: A high-velocity, open channel for conveying water to a lower level without erosion of the higher area.
- **Riprap**: A layer, facing, or protective mound of stones placed to prevent erosion or scour at a structure or embankment.
- **Sand bag**: Sack made of varying textile which is filled with sand and closed on both ends.
- **Swale**: An elongated depression in the land surface that is at least seasonally wet, is usually heavily vegetated, and is normally without standing or flowing water.
- **Check dams:** Small, temporary dams constructed across a drainage ditch to reduce the velocity of concentrated flows, reducing erosion of the swale or ditch.
- **Curb inlet/drop inlet protection:** Installation of various kinds of sediment trapping measures (straw logs, etc.) around a curb inlet prior to permanent stabilization of the disturbed area. Limited to drainage areas not exceeding one acre and not intended to control concentrated storm water flows.

- **Catch basin:** A receptacle for diverting water to a sewer or subdrain, having at its base a sediment bowl to prevent the admission of coarse material into a sewer, stream, or roadway.
- **Rolled erosion control products:** Nets, tarps, blankets, and mats used to cover and protect soil from raindrop impact and subsequent erosion.

The APWA's Single Family Residential Standard Design Booklet is an excellent resource document that details installation practices for various BMP's. This document is available at http://kcmetro.apwa.net/kcmetro/documents/SRF%20Drawings.pdf

For a complete list of Best Management Practices, definitions, and applicable uses, reference APWA Kansas City Metro Chapter document "Division 5100 Erosion and sediment control, section 5105, *matrix of best management practices*." This document is available at: http://kcmetro.apwa.net/kcmetro/specs/APWA5100.pdf

Pertinent definitions:

- **Accelerated erosion:** Erosion caused or increased by human activity such as construction.
- **Acre:** An area of measurement equal to 43,560 square feet.
- **Backfill:** The process of placing soil, gravel, rock, or other material to replace what was removed during construction.
- **Concrete:** A masonry product composed of Portland cement, sand, gravel, or other coarse aggregate. The addition of water causes hydration, a chemical reaction that yields hardened concrete.
- **Destabilize soil:** To expose and/or loosen soil thus making it more susceptible to erosion.
- **Discharge:** A volume of fluid passing a given point per unit of time. The flow rate of storm water is commonly expressed as cubic feet per second
- **EPA:** Environmental Protection Agency. Federal agency responsible for the Clean Water Act.
- **Fill:** Deposit of soil or other material placed by artificial means.
- **Finished grade:** The final elevation of the ground surface conforming to the approved construction plan.
- **Grade:** The vertical location of the ground surface. Measured in feet above sea level, commonly in tenths of feet.
    a) **Existing grade** is the grade prior to any land disturbance activities for which a permit is being sought.
    b) **Rough grade** is the stage at which the grade approximately conforms to the approved plan topography.
    c) **Finish grade** is the final grade of the site which conforms to the approved plan topography.
- **Grading:** Any stripping, cutting, filling, stockpiling, or combination thereof.

- **Hydric soil:** Soils that are wet long enough to periodically produce anaerobic conditions, thereby negatively or positively influencing the growth of plants.
- **KDHE:** Kansas Department of Health and Environment. State agency that regulates the NPDES program, including storm water runoff permitting.
- **Land disturbance activities:** Activities that destroy or remove the vegetation that cover the soil. These activities include clearing and grading.
- **NPDES:** National Pollutant Discharge Elimination System. Mandated by congress under the Clean Water Act, a two-phased national program to address nonagricultural sources of storm water discharge and to prevent harmful pollutants from being washed into local bodies of water by storm water runoff.
- **Scour:** The clearing and digging action of flowing air or water, especially the downward erosion caused by water sweeping away soil and silt from outside bank of a curved channel during periods of elevated flow.
- **Sediment:** Soils or other materials transported by surface water as a product of erosion.
- **Water course:** A natural or artificial channel in which a flow of water occurs, whether continuously or intermittently.
- **Water quality:** The chemical, physical, and biological characteristics of water, usually with respect to its suitability for a particular purpose.
- **Watershed:** The region drained by or contributing water to a stream, lake, or other body of water.
- **Wetland:** Land area that is wet or flooded by surface or groundwater often enough and long enough to develop characteristic hydric soil properties and to support vegetation that will grow in saturated soil conditions.