

Agenda Item: 10.

MEMORANDUM

TO: Programs, Projects and Operations Subcommittee

FROM: Amanda Grint, Water Resources Engineer

SUBJECT: Resolution to Accept Sealed Bids for the Disposal of Soil
Aggregates within the Dam Site 15A Project

DATE: November 7, 2014

In response to the proposed resolution listed below, staff has prepared a memorandum to present some key issues when contemplating the sale of excess earthwork material from a District project.

PROPOSED RESOLUTION

The Papio-Missouri Natural Resources District will except by seal bids the absolute disposal of any and all soil aggregates below the waters lines within the dam site 15A project area.

The Papio-Missouri Natural Resources District property advertise and seek bids to be reviewed at the Papio-Missouri Natural Resources District office at 2:00 P.M. on Jan. 9th 2015.

Papio-Missouri Natural Resources District board will review and select the best offer for any and all soil aggregates at the Jan. 2015 board meeting.

Projects are designed by balancing available material resources. The value of fill material from District projects is highly dependent on the availability of other fill, the suitability of the soil that is available, and the location and timing of nearby projects. Expanding the project to include excess fill may require additional design, planning, permitting and land acquisition.

Earthwork Mass Balance

Construction projects, specifically reservoir projects, require large amounts of excavated material to construct the dam embankment and are designed to balance the amount of material excavated or “cut” and the material placed and compacted or “fill” in an attempt to control costs. On a reservoir project, sources of suitable material are from the excavation of the auxiliary spillway and from the reservoir pool. Earthwork design elements (e.g. dam and water quality basin, roadways, and fishery enhancements) cut and

fill quantities are balanced throughout the site using the shortest haul routes. If the earthwork balance is varied to allow for excess cut, it should be addressed early in the design process and communicated in the construction documents.

Earthwork Suitability

Not all earthwork excavated is suitable as embankment fill material. Material unsuitable for one application may be suitable for another application. Each construction site is different and there can be a wide-variability in earthwork material properties. If suitable material is not available on-site, then off-site borrow material is required. If unsuitable material is found, this material would need to be either wasted on site or disposed of off-site. If material is to be sold, it is likely that additional geotechnical borings and analysis completed to better understand the suitability of the subsurface materials and allow for better definition of the soil properties.

Phasing and Timing

The marketability of the earthwork material depends on the availability (or supply) and the desire (or demand) for the material and timing is critical. Typically earthwork material is excavated and placed where it is needed; thereby, not requiring the material to be stockpiled and moved at a later time. To reduce handling costs and avoid delays, there is typically a small window when material is available and when it is desired. Each project has its own challenges (e.g. weather and scheduling delays) and coordinating removal of excess material by others may not work on all projects. If excess soil is to be excavated from certain District projects, the time to determine that is either during the early design process by establishing a quantity of material to be excavated, stockpiled and then sold or after the major components of the project are constructed and excess material has been identified. It is important during dam construction to have flexibility to use the best available material for the dam embankment. During a project, the phased grading of the dam allows for a limited window of when below pool material can be removed and when water begins ponding. Any mid-project excavation would need to be carefully coordinated so as not to cause delays to the project. For example, on the Prairie Queen project where excess material was available for almost 8-months. The surrounding areas were under active development but there was simply no demand. If projects are developed in conjunction and integrated it could be a benefit to the District but the expense to the project would need to be carefully considered.

Deeper Pool

Over-excavating the reservoir pool could provide excess earthwork material to provide a benefit to the project for some amount of material. If a project has sufficient suitable material, a window of time can be defined for a contractor to remove excess material. As described above, the window of time may be short and is dependent on when the District takes possession of the land and the construction begins and the phasing of the dam embankment. There is a diminishing return to fisheries benefits after a certain depth because of oxygen availability and the Nebraska Game and Parks Commission would need to be consulted to determine the benefit of additional pool depth. Additional sediment storage is a potential benefit but the balance would need to be determined between the

benefit to fisheries, additional storage, and the ability of the watershed to sustain a certain sized reservoir.

Permitting and Land Acquisition

Excavating beyond what is required by the project, may impact permit conditions. Early in the design process, project features and its limits are defined for permitting and property acquisition purposes. For the USACE Section 404 permit, project impacts are evaluated and either avoided, minimized or mitigated. Any non-project excavations would need to be evaluated as permitting impacts may increase. In addition, the Nebraska DNR storage permit is impacted by additional excavations and the amount of water stored behind a reservoir.

Excavation on Completed Projects

After completion of projects, soil could be identified to be sold in the upland areas; however, the costs to do so should allow for stripping the topsoil, excavating material to acceptable grades and then respreading topsoil and reseeding. Also, it would be necessary to be mindful of permit conditions for the project. For example, some areas around reservoirs are necessary as buffers per USACE permit requirements.

It is staff recommendation that the PPO Subcommittee recommend to the Board of Directors, that the proposed resolution for the absolute disposal of any and all soil aggregates below the water lines within the Papio dam site 15A project area not be approved and that it be the general intent of the District to continue planning projects with an earthwork mass balance objective.