

DOCKET NO. 2009-019
CAUSE NO. C/25/0005

PETITIONERS' EXHIBIT NO. 34

reclamation operation are identified.

124. The heading entitled INSPECTION AND ENFORCEMENT delineates the authority, administrative procedures, civil penalties, and employee protection attendant to the Division's inspection and enforcement program.

130. Effective Date. The provisions of R645-100 through and including R645-402 will become effective and enforceable upon final approval by the Office of Surface Mining, U.S. Department of the Interior. Existing coal regulatory program rules, R645 Chapters I and II, will be in effect until approval of R645-100 through R645-402 by the Office of Surface Mining and will be considered repealed upon approval of R645-100 through R645-402.

R645-100-200. Definitions.

As used in the R645 Rules, the following terms have the specified meanings:

"Abandoned site" means, for the purpose of R645-400, a coal mining and reclamation operation for which the Division has found in writing that,

(a) All coal mining and reclamation operations at the site have ceased;

(b) The Division has issued at least one notice of violation or the initial program equivalent, and either:

(i) Is unable to serve the notice despite diligent efforts to do so; or

(ii) The notice was served and has progressed to a failure-to-abate cessation order or the initial program equivalent;

(c) The Division:

(i) Is taking action to ensure that the permittee and operator, and owners and controllers of the permittee and operator, will be precluded from receiving future permits while violations continue at the site; and

(ii) Is taking action pursuant to section 40-10-20(5), 40-10-20(6), 40-10-22(1)(d), or 40-10-22(2)(a) of the Act to ensure that abatement occurs or that there will not be a recurrence of the failure-to-abate, except where after evaluating the circumstances it concludes that further enforcement offers little or no likelihood of successfully compelling abatement or recovering any reclamation costs; and

(d) Where the site is, or was, permitted and bonded:

(i) The permit has either expired or been revoked; and

(ii) The Division has initiated and is diligently pursuing forfeiture of, or has forfeited any available performance bond.

(e) In lieu of the inspection frequency established in R645-400-130, the Division shall inspect each abandoned site on a set frequency commensurate with the public health and safety and environmental considerations present at each specific site, but in no case shall the inspection frequency be set at less than one complete inspection per calendar year.

(1) In selecting an alternate inspection frequency authorized under part (e) of this definition, the Division shall first conduct a complete inspection of the abandoned site and provide public notice under paragraph (2) below. Following the inspection and public notice, the Division shall prepare and maintain for public review a written finding justifying the alternative inspection frequency selected. This written finding shall justify the new inspection frequency by affirmatively addressing in detail all of the following criteria:

(i) How the site meets each of the criteria under the definition of an abandoned site and thereby qualifies for a reduction in inspection frequency;

(ii) Whether, and to what extent, there exist on the site impoundments, earthen structures or other conditions that pose, or may reasonably be expected to change into, imminent dangers to the health or safety of the public or significant environmental harms to land, air or water resources;

(iii) The extent to which existing impoundments or earthen structures were constructed and certified in accordance with prudent engineering designs approved in the permit;

(iv) The degree to which erosion and sediment control is present and functioning;

(v) The extent to which the site is located near or above urbanized areas, communities, occupied dwellings, schools and other public or commercial buildings and facilities;

(vi) The extent of reclamation completed prior to abandonment and the degree of stability of unreclaimed areas, taking into consideration the physical characteristics of the land mined and the extent of settlement or revegetation that has occurred naturally with time; and

(vii) Based on a review of the complete and partial inspection report record for the site during at least the last two consecutive years, the rate at which adverse environmental or public health and safety conditions have and can be expected to progressively deteriorate.

(2) The public notice and opportunity to comment required under part (e)(1) of this definition shall be provided as follows:

(i) The Division shall place a notice in the newspaper with the broadest circulation in the locality of the abandoned site providing the public with a 30-day period in which to submit written comments.

(ii) The public notice shall contain the permittee's name, the permit number, the precise location of the land affected, the inspection frequency proposed, the general reasons for reducing the inspection frequency, the bond status of the permit, the telephone number and address of the office where written comments on the reduced inspection frequency may be submitted, and the closing date of the comment period.

"Account" means the Abandoned Mine Reclamation Account established pursuant to Section 40-10-25 of the Act.

"Acid Drainage" means water with a pH of less than 6.0 and in which total acidity exceeds total alkalinity discharged from an active, inactive, or abandoned coal mining and reclamation operation, or from an area affected by coal mining and reclamation operations.

"Acid-Forming Materials" means earth materials that contain sulfide minerals or other materials which, if exposed to air, water, or weathering processes, form acids that may create acid drainage.

"Act" means Utah Code Annotated Section 40-10-1 et seq.

"Adjacent Area" means the area outside the permit area where a resource or resources, determined according to the context in which adjacent area is used, are or reasonably could be expected to be adversely impacted by proposed coal mining and reclamation operations, including probable impacts from underground workings.

"Administratively Complete Application" means an application for permit approval or approval for coal exploration, where required, which the Division determines to contain information addressing each application requirement of the State Program and to contain all information necessary to initiate processing and public review.

"Affected Area" means any land or water surface area which is used to facilitate, or is physically altered by, coal mining and reclamation operations. The affected area includes the disturbed area; any area upon which coal mining and reclamation operations are conducted; any adjacent lands the use of which is incidental to coal mining and reclamation operations; all areas covered by new or existing roads used to gain access to, or for hauling coal to or from coal mining and reclamation operations, except as provided in this definition; any area covered by surface excavations, workings, impoundments, dams, ventilation shafts, entryways, refuse banks, dumps, stockpiles, overburden piles, spoil banks, culm banks, tailings, holes or depressions, repair areas, storage areas, shipping areas; any areas upon which are sited structures, facilities, or other property material on the surface resulting from, or incident to, coal mining and reclamation operations; and the area located above underground workings. The affected area shall include every road used for purposes of access to, or for hauling coal to or from, coal mining and reclamation operations, unless the road (a) was designated as a public road pursuant to the laws of the jurisdiction in which it is located; (b) is maintained with public funds, and constructed, in a manner similar to other public roads of the same classification within the jurisdiction; and (c) there is substantial (more than incidental) public use. Editorial Note: The definition of "Affected area", insofar, as it excludes roads which are included in the definition of "Surface coal mining operations", was suspended at 51 FR 41960, Nov. 20, 1986. Accordingly, Utah suspends the definition of Affected Area insofar as it excludes roads which are included in the definition of "coal mining and reclamation operations."

"Agricultural Use" means the use of any tract of land for the production of animal or vegetable life. The uses include, but are not limited to, the pasturing, grazing, and watering of livestock, and the cropping, cultivation, and harvesting of plants.

"Alluvial Valley Floors" means the unconsolidated stream-laid deposits holding streams with water availability sufficient for subirrigation or flood irrigation agricultural activities, but does not include upland areas which are generally overlain by a thin veneer of colluvial deposits composed chiefly of debris from sheet erosion, deposits formed by unconcentrated runoff or slope wash, together with talus, or other mass-movement accumulations, and windblown deposits.

"Applicant" means any person seeking a permit, permit change, and permit renewal, transfer, assignment, or sale of permit rights from the Division to conduct coal mining and reclamation operations or, where required, seeking approval for coal exploration.

"Application" means the documents and other information filed with the Division under the R645 Rules for the issuance of permits; permit changes; permit renewals; and transfer, assignment, or sale of permit rights for coal mining and reclamation operations or, where required, for coal exploration.

"Approximate Original Contour" means that surface configuration achieved by backfilling and grading of the mined areas so that the reclaimed area, including any terracing or access roads, closely resembles the general surface configuration of the land prior to mining and blends into and complements the drainage pattern of the surrounding terrain with all highwalls, spoil piles, and coal refuse piles having a design approved under the R645 Rules and prepared for abandonment. Permanent water impoundments may be permitted where the Division has determined that they

comply with R645-301-413.100 through R645-301-413.334, R645-301-512.240, R645-301-514.300, R645-301-515.200, R645-301-533.100 through R645-301-533.600, R645-301-542.400, R645-301-733.220 through R645-301-733.224, R645-301-743, R645-302-270 through R645-302- 271.400, R645-302-271.600, R645-302-271.800, and R645-302-271.900.

"Aquifer" means a zone, stratum, or group of strata that can store and transmit water in sufficient quantities for a specific use.

"Arid and Semiarid Area" means, in the context of ALLUVIAL VALLEY FLOORS, an area where water use by native vegetation equals or exceeds that supplied by precipitation. All coalfields in Utah are in arid and semiarid areas.

"Auger Mining" means a method of mining coal at a cliff or highwall by drilling holes into an exposed coal seam from the highwall and transporting the coal along an auger bit to the surface.

"Best Technology Currently Available" means equipment, devices, systems, methods, or techniques which will (a) prevent, to the extent possible, additional contributions of suspended solids to stream flow or runoff outside the permit area, but in no event result in contributions of suspended solids in excess of requirements set by applicable state or federal laws; and (b) minimize, to the extent possible, disturbances and adverse impacts on fish, wildlife, and related environmental values, and achieve enhancement of those resources where practicable. The term includes equipment, devices, systems, methods, or techniques which are currently available anywhere as determined by the Director, even if they are not in routine use. The term includes, but is not limited to, construction practices, siting requirements, vegetation selection and planting requirements, animal stocking requirements, scheduling of activities, and design of sedimentation ponds in accordance with R645-301 and R645-302. Within the constraints of the State Program, the Division will have the discretion to determine the best technology currently available on a case-by-case basis, considering among other things the economic feasibility of the equipment, devices, systems, methods or techniques, as authorized by the Act and the R645 Rules.

"Blaster" means a person who is directly responsible for the use of explosives in connection with surface blasting operations incidental to UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES or SURFACE COAL MINING AND RECLAMATION ACTIVITIES, and who holds a valid certificate issued by the Division in accordance with the statutes and regulations administered by the Division governing training, examination, and certification of persons responsible for the use of explosives in connection with surface blasting operations incident to coal mining and reclamation operations.

"Board" means the Board of Oil, Gas and Mining for the state of Utah, or the Board's delegated representative.

"Cemetery" means any area of land where human bodies are interred.

"Coal" means combustible carbonaceous rock, classified as anthracite, bituminous, subbituminous, or lignite by ASTM Standard D388-95.

"Coal Exploration" means the field gathering of: (a) surface or subsurface geologic, physical, or chemical data by mapping, trenching, drilling, geophysical, or other techniques necessary to determine the quality and quantity of overburden and coal of an area; or (b) the gathering of environmental data to establish the conditions of an area before beginning coal mining and reclamation operations under the requirements of the R645 Rules.

"Coal Mine Waste" means coal processing waste and underground development waste.

"Coal Mining and Reclamation Operations" means (a) activities conducted on the surface of lands in connection with a surface coal mine or, subject to the requirements of Section 40-10-18 of the Act, surface coal mining and reclamation operations and surface impacts incident to an underground coal mine, the products of which enter commerce or the operations of which directly or indirectly affect interstate commerce. Such activities include all activities necessary and incidental to the reclamation of the operations, excavation for the purpose of obtaining coal, including such common methods as contour, strip, auger, mountaintop removal, box cut, open pit, and area mining; the use of explosives and blasting; in-situ distillation; or retorting, leaching, or other chemical or physical processing; and the cleaning, concentrating, or other processing or preparation of coal. Such activities also include the loading of coal for interstate commerce at or near the mine site. Provided, these activities do not include the extraction of coal incidental to the extraction of other minerals, where coal does not exceed 16-2/3 percent of the tonnage of minerals removed for purposes of commercial use or sale, or coal exploration subject to Section 40-10-8 of the Act; and, provided further, that excavation for the purpose of obtaining coal includes extraction of coal from coal refuse piles; and (b) the areas upon which the activities described under part (a) of this definition occur or where such activities disturb the natural land surface. These areas will also include any adjacent land the use of which is incidental to any such activities, all lands affected by the construction of new roads or the improvement or use of existing roads to gain access to the site of those activities and for haulage and excavation, workings, impoundments, dams, ventilation shafts, entryways, refuse banks, dumps, stockpiles, overburden piles, spoil banks, culm banks, tailings, holes or depressions, repair areas, storage areas, processing areas, shipping areas, and other areas upon which are sited structures, facilities, or other property or material on the surface, resulting from or incident to those activities.

"Coal Mining and Reclamation Operations Which Exist on the Date of Enactment" means all coal mining and reclamation operations which were being conducted on August 3, 1977.

"Coal Preparation or Coal Processing" means the chemical and physical processing and the cleaning, concentrating, or other processing or preparation of coal.

"Coal Processing Plant" means a facility where coal is subjected to chemical or physical processing or the cleaning, concentrating, or other processing or preparation. Coal processing plant includes facilities associated with coal processing activities, such as, but not limited to, the following: loading facilities; storage and stockpile facilities; sheds, shops, and other buildings; water-treatment and water-storage facilities; settling basins and impoundments; and coal processing and other waste disposal areas.

"Coal Processing Waste" means earth materials which are separated from the product coal during cleaning, concentrating, or the processing or preparation of coal.

"Collateral Bond" means an indemnity agreement in a sum certain executed by the permittee as principal which is supported by the deposit with the Division of: (a) a cash account, which will be the deposit of cash in one or more federally-insured or equivalently protected accounts, payable only to the Division upon demand, or the deposit of cash directly with the Division; (b) negotiable bonds of the United States, a State, or a municipality, endorsed to the order of, and placed in the possession of, the Division; (c) negotiable certificates of deposit, made payable or assigned to the Division and placed in its possession, or held by a federally insured bank; (d) an

irrevocable letter of credit of any bank organized or authorized to transact business in the United States payable only to the Division upon presentation; (e) a perfected, first lien security interest in real property in favor of the Division; or (f) other investment grade rated securities having a rating of AAA or AA or A, or an equivalent rating issued by a nationally recognized securities rating service, endorsed to the order of, and placed in the possession of, the Division.

"Combustible Material" means organic material that is capable of burning, either by fire or through oxidation, accompanied by the evolution of heat and a significant temperature rise.

"Community or Institutional Building" means any structure, other than a public building or an occupied dwelling, which is used primarily for meetings, gatherings or functions of local civic organizations or other community groups; functions including, but not limited to educational, cultural, historic, religious, scientific, correctional, mental-health or physical-health care facility; or is used for public services, including, but not limited to, water supply, power generation, or sewage treatment.

"Compaction" means increasing the density of a material by reducing the voids between the particles, and is generally accomplished by controlled placement and mechanical effort such as from repeated application of wheel, track, or roller loads from heavy equipment.

"Complete and Accurate Application" means an application for permit approval or approval for coal exploration, where required, which the Division determines to contain all information required under the Act, the R645 Rules, and the State Program that is necessary to make a decision on permit issuance.

"Continuously Mined Areas" means land which was mined for coal by underground mining operations prior to August 3, 1977, the effective date of the Federal Act, and where mining continued after that date.

"Cooperative Agreement" means the agreement between the Governor of the State of Utah and the Secretary of the Department of the Interior as published at 30 CFR 944.30.

"Cropland" means land used for the production of adapted crops for harvest, alone or in a rotation with grasses and legumes, and includes row crops, small grain crops, hay crops, nursery crops, orchard crops, and other similar specialty crops.

"Cumulative Impact Area" means the area, including the permit area, within which impacts resulting from the proposed operation may interact with the impacts of all anticipated mining on surface and groundwater systems. Anticipated mining will include, at a minimum, the entire projected lives through bond releases of: (a) the proposed operation, (b) all existing operations, (c) any operation for which a permit application has been submitted to the Division, and (d) all operations required to meet diligent development requirements for leased federal coal for which there is actual mine development information available.

"Cumulative measurement period" means, for the purpose of R645-106, the period of time over which both cumulative production and cumulative revenue are measured.

(a) For purposes of determining the beginning of the cumulative measurement period, subject to Division approval, the operator must select and consistently use one of the following:

(i) For mining areas where coal or other minerals were extracted prior to August 3, 1977, the date extraction of coal or other minerals commenced at that mining area

or August 3, 1977, or

(ii) For mining areas where extraction of coal or other minerals commenced on or after August 3, 1977, the date extraction of coal or other minerals commenced at that mining area, whichever is earlier.

(b) For annual reporting purposes pursuant to R645-106-900, the end of the period for which cumulative production and revenue is calculated is either

(i) For mining areas where coal or other minerals were extracted prior to July 1, 1992, June 30, 1992, and every June 30 thereafter; or

(ii) For mining areas where extraction of coal or other minerals commenced on or after July 1, 1992, the last day of the calendar quarter during which coal extraction commenced, and each anniversary of that day thereafter.

"Cumulative production" means, for the purpose of R645-106, the total tonnage of coal or other minerals extracted from a mining area during the cumulative measurement period. The inclusion of stockpiled coal and other mineral tonnages in this total is governed by R645-106-700.

"Cumulative revenue" means, for the purpose of R645-106, the total revenue derived from the sale of coal or other minerals and the fair market value of coal or other minerals transferred or used, but not sold, during the cumulative measurement period.

"Current Assets" means cash or other assets or resources which are reasonably expected to be converted to cash or sold or consumed within one year or within the normal operating cycle of the business.

"Current Liabilities" means obligations which are reasonably expected to be paid or liquidated within one year or within the normal operating cycle of the business.

"Direct Financial Interest" means ownership or part ownership by an employee of lands, stocks, bonds, debentures, warrants, partnership shares, or other holdings, and also means any other arrangement where the employee may benefit from his or her holding in or salary from coal mining and reclamation operations. Direct financial interests include employment, pensions, creditor, real property, and other financial relationships.

"Director" means the Director, Utah State Division of Oil, Gas and Mining, or the Director's representative.

"Director of the Office" means the Director of the Office of Surface Mining, Reclamation and Enforcement, U.S. Department of the Interior.

"Disturbed Area" means an area where vegetation, topsoil, or overburden is removed or upon which topsoil, spoil, coal processing waste, underground development waste, or noncoal waste is placed by coal mining and reclamation operations. Those areas are classified as disturbed until reclamation is complete and the performance bond or other assurance of performance required by R645-301-800 is released. For the purposes of R645-301-356.300, R645-301-356.400, R645-301-513.200, R645-301-742.200 through R645-301-742.240, and R645-301-763, disturbed area will not include those areas (a) in which the only coal mining and reclamation operations include diversion ditches, siltation structures, or roads that are designed, constructed and maintained in accordance with R645-301 and R645-302; and (b) for which the upstream area is not otherwise disturbed by the operator.

"Diversion" means a channel, embankment, or other man-made structure constructed to divert water from one area to another.

"Division" means Utah State Division of Oil, Gas and Mining, the designated state regulatory authority.

"Downslope" means the land surface between the projected outcrop of the lowest coalbed being mined along each highwall and a valley floor.

"Edge Effect" means the positive effect created by the juxtaposition of two diverse habitats.

"Embankment" means an artificial deposit of material that is raised above the natural surface of the land and used to contain, divert, or store water, support roads or railways, or for other similar purposes.

"Employee" means any person employed by the Division who performs any function or duty under the Act, and does not mean the Board of Oil, Gas and Mining which is excluded from this definition.

"Ephemeral Stream" means a stream which flows only in direct response to precipitation in the immediate watershed, or in response to the melting of a cover of snow and ice, and which has a channel bottom that is always above the local water table.

"Essential Hydrologic Functions" means the role of an ALLUVIAL VALLEY FLOOR in collecting, storing, regulating, and making the natural flow of surface or ground water, or both, usefully available for agricultural activities by reason of the valley floor's topographic position, the landscape, and the physical properties of its underlying materials. A combination of these functions provides a water supply during extended periods of low precipitation.

"Excess Spoil" means spoil material disposed of in a location other than the mined-out area, provided that the spoil material used to achieve the approximate original contour or to blend the mined-out area with the surrounding terrain in accordance with R645-301-553.220 in nonsteep slope areas will not be considered excess spoil.

"Existing Structure" means a structure or facility used in connection with or to facilitate coal mining and reclamation operations for which construction began prior to January 21, 1981.

"Extraction of Coal as an Incidental Part" means the extraction of coal which is necessary to enable government-financed construction to be accomplished. For purposes of R645-102, only that coal extracted from within the right-of-way in the case of a road, railroad, utility line, or other such construction, or within the boundaries of the area directly affected by other types of government-financed construction, may be considered incidental to that construction. Extraction of coal outside the right-of-way or boundary of the area directly affected by the construction will be subject to the requirements of the Act and the R645 Rules.

"Federal Act" means the Surface Mining Control and Reclamation Act of 1977 (P.L. 95-87).

"Federal Lands" means any land, including mineral interests, owned by the United States without regard to how the United States acquired ownership of the lands or which agency manages the lands. It does not include Indian lands.

"Fixed Assets" means plants and equipment, but does not include land or coal in place.

"Flood Irrigation" means, with respect to ALLUVIAL VALLEY FLOORS, supplying water to plants by natural overflow or the diversion of flows, so that the irrigated surface is largely covered by a sheet of water.

"Fragile Lands" means, for the purposes of R645-103-300, geographic areas containing natural, ecologic, scientific, or aesthetic resources that could be significantly damaged or be destroyed by coal mining and reclamation operations. Examples of fragile lands include valuable habitats for fish or wildlife, critical habitats for endangered or threatened species of animals or plants, uncommon geologic formations, paleontological sites, National Natural Landmark sites, areas where mining may result in flooding, environmental corridors containing a concentration of ecologic and aesthetic features, areas of recreational value due to high environmental quality.

"Fugitive Dust" means that particulate matter not emitted from a duct or stack which becomes airborne due to the forces of wind or coal mining and reclamation operations, or both. During coal mining and reclamation operations, it may include emissions from haul roads; wind erosion of exposed surfaces, storage piles, and spoil piles; reclamation operations; and other activities in which material is either removed, stored, transported, or redistributed.

"Fund" means the Abandoned Mine Reclamation Account established pursuant to 40-10-25 of the Act.

"Government-Financed Construction" means, for the purposes of R645-102, construction funded 50 percent or more by funds appropriated from a government-financing agency's budget or obtained from general revenue bonds, but will not mean government-financing agency guarantees, insurance, loans, funds obtained through industrial revenue bonds or their equivalent, or in-kind payments.

"Government Financing Agency" means, for the purposes of R645-102 a federal, state, county, municipal, or local unit of government, or a department, bureau, agency or office of the unit which, directly or through another unit of government, finances construction.

"Gravity Discharge" means, with respect to UNDERGROUND MINING AND RECLAMATION ACTIVITIES, mine drainage that flows freely in an open channel downgradient. Mine drainage that occurs as a result of flooding a mine, to the level of the discharge, is not gravity discharge.

"Ground Cover" means the area of ground covered by the combined aerial parts of vegetation and the litter that is produced naturally on-site, expressed as a percentage of the total area of measurement.

"Ground Water" means subsurface water that fills available openings in rock or soil materials to the extent that they are considered water saturated.

"Habitats of Unusually High Value for Fish and Wildlife" means an area defined by the state as crucial-critical use areas for wildlife.

"Half-Shrub" means a perennial plant with a woody base whose annually produced stems die back each year.

"Head-of-Hollow Fill" means a fill structure consisting of any material, other than organic material, placed in the uppermost reaches of a hollow where side slopes of the existing hollow, measured at the steepest point, are greater than 20 degrees, or the average slope of the profile of the hollow from the toe of the fill to the top of the fill, is greater than ten degrees. In head-of-hollow fills, the top surface of the fill, when completed, is at approximately the same elevation as the adjacent ridge line, and no significant area of natural drainage occurs above the fill draining into the fill area.

"Higher or Better Uses" means postmining land uses that have a higher economic value or nonmonetary benefit to the landowner, or the community, than the

premining land uses.

"Highwall" means the face of exposed overburden and coal in an open cut of surface coal mining and reclamation activities or for entry to underground mining activities.

"Highwall Remnant" means that portion of highwall that remains after backfilling and grading of a REMINING permit area.

"Historic Lands" means, for the purposes of R645-103-300, areas containing historic, cultural, and scientific resources. Examples of historic lands include archeological sites, properties listed on or eligible for listing on a Utah or National Register of Historic Places, National Historic Landmarks, properties having religious or cultural significance to native Americans or religious groups, and properties for which historic designation is pending.

"Historically Used for Cropland" means (a) lands that have been used for cropland for any five years or more out of the ten years immediately preceding the acquisition, including purchase, lease, or option, of the land for the purpose of conducting or allowing through resale, lease, or option the conducting of coal mining and reclamation operations; (b) lands that the Division determines, on the basis of additional cropland history of the surrounding lands and the lands under consideration, that the permit area is clearly cropland but falls outside the specific five-years-in-ten criterion, in which case the regulations for prime farmland may be applied to include more years of cropland history only to increase the prime farmland acreage to be preserved; or (c) lands that would likely have been used as cropland for any five out of the last ten years, immediately preceding such acquisition but for the same fact of ownership or control of the land unrelated to the productivity of the land.

"Hydrologic Balance" means the relationship between the quality and quantity of water inflow to, water outflow from, and water storage in a hydrologic unit such as a drainage basin, aquifer, soil zone, lake, or reservoir. It encompasses the dynamic relationships among precipitation, runoff, evaporation, and changes in ground and surface water storage.

"Hydrologic Regime" means the entire state of water movement in a given area. It is a function of the climate and includes the phenomena by which water first occurs as atmospheric water vapor, passes into a liquid or solid form, falls as precipitation, moves along or into the ground surface and returns to the atmosphere as vapor by means of evaporation and transpiration.

"Imminent Danger to the Health and Safety of the Public" means the existence of any condition or practice, or any violation of a permit or other requirements of the Act in a coal mining and reclamation operation, which could reasonably be expected to cause substantial physical harm to persons outside the permit area before the condition, practice, or violation can be abated. A reasonable expectation of death or serious injury before abatement exists if a rational person, subjected to the same condition or practice giving rise to the peril, would avoid exposure to the danger during the time necessary for abatement.

"Impounding Structure" means a dam, embankment, or other structure used to impound water, slurry, or other liquid or semiliquid material.

"Impoundments" means all water, sediment, slurry, or other liquid or semiliquid holding structures, either naturally formed or artificially built.

"Indian Lands" means all lands, including mineral interests, within the exterior boundaries of any federal Indian reservation, notwithstanding the issuance of any

patent, and including rights-of-way, and all lands including mineral interests held in trust for or supervised by an Indian tribe.

"Indirect Financial Interest" means the same financial relationships as for direct ownership, but where the employee reaps the benefits of such interests, including interests held by his or her spouse, minor child(ren) and other relatives, including in-laws, residing in the employee's home. The employee will not be deemed to have an indirect financial interest if there is no relationship between the employee's functions or duties and the coal mining and reclamation operations in which the spouse, minor child(ren), or other resident relatives hold a financial interest.

"In-Situ Processes" means activities conducted on the surface or underground in connection with in- place distillation, retorting, leaching, or other chemical or physical processing of coal. The term includes, but is not limited to, in-situ gasification, in-situ leaching, slurry mining, solution mining, borehole mining, and fluid-recovery mining.

"Intermittent Stream" means a stream, or reach of a stream, that is below the local water table for at least some part of the year and obtains its flow from both surface runoff and groundwater discharge.

"Irreparable Damage to the Environment" means any damage to the environment in violation of the Act, the State Program, or the R645 Rules that cannot be corrected by actions of the applicant.

"Knowingly" means for the purposes of R645-402, that an individual knew or had reason to know in authorizing, ordering, or carrying out an act or omission on the part of a corporate permittee that such act or omission constituted a violation, failure, or refusal.

"Land Use" means specific uses or management-related activities, rather than the vegetation or cover of the land. Land uses may be identified in combination when joint or seasonal uses occur and may include land used for support facilities that are an integral part of the use. Changes of land use from one of the following categories to another will be considered as a change to an alternative land use which is subject to approval by the Division.

CROPLAND - Land used for the production of adapted crops for harvest, alone or in rotation with grasses and legumes, that include row crops, small grain crops, hay crops, nursery crops, orchard crops, and other similar crops.

DEVELOPED WATER RESOURCES - Land used for storing water for beneficial uses such as stock ponds, irrigation, fire protection, flood control, and water supply.

FISH AND WILDLIFE HABITAT - Land dedicated wholly or partially to the production, protection, or management of species of fish or wildlife.

FORESTRY - Land used or managed for the long-term production of wood, wood fiber, or wood-derived products.

GRAZING LAND - Land used for grasslands and forest lands where the indigenous vegetation is actively managed for grazing, browsing, or occasional hay production.

INDUSTRIAL/COMMERCIAL - Land used for (a) extraction or transformation of materials for fabrication of products, wholesaling of products, or long-term storage of products; this includes all heavy and light manufacturing facilities, or (b) retail or trade of goods or services, including hotels, motels, stores, restaurants, and other commercial establishments.

PASTURE LAND OR LAND OCCASIONALLY CUT FOR HAY - Land used

primarily for the long-term production of adapted, domesticated forage plants to be grazed by livestock or occasionally cut and cured for livestock feed.

RECREATION - Land used for public or private leisure-time activities, including developed recreation facilities such as parks, camps, and amusement areas, as well as areas for less intensive uses such as hiking, canoeing, and other undeveloped recreational uses.

RESIDENTIAL - Land used for single and multiple-family housing, mobile home parks, or other residential lodgings.

UNDEVELOPED LAND OR NO CURRENT USE OR LAND MANAGEMENT - Land that is undeveloped or if previously developed, land that has been allowed to return naturally to an undeveloped state or has been allowed to return to forest through natural succession.

"Liabilities" means obligations to transfer assets or provide services to other entities in the future as a result of past transactions.

"Material Damage" for the purposes of R645-301-525, means:

- (a) Any functional impairment of surface lands, features, structures or facilities;
- (b) Any physical change that has a significant adverse impact on the affected land's capability to support any current or reasonably foreseeable uses or causes significant loss in production or income; or
- (c) Any significant change in the condition, appearance or utility of any structure or facility from its pre-subsidence condition.

"Materially Damage the Quantity or Quality of Water" means, with respect to ALLUVIAL VALLEY FLOORS, to degrade or reduce, by coal mining and reclamation operations, the water quantity or quality supplied to the alluvial valley floor to the extent that resulting changes would significantly decrease the capability of the alluvial valley floor to support agricultural activities.

"Mining" means, for the purposes of R645-400-351, (a) extracting coal from the earth or coal waste piles and transporting it within or from the permit area; and (b) the processing, cleaning, concentrating, preparing or loading of coal where such operations occur at a place other than a mine site.

"Mining area" means, for the purpose of R645-106, an individual excavation site or pit from which coal, other minerals and overburden are removed.

"Moist Bulk Density" means the weight of soil (oven dry) per unit volume. Volume is measured when the soil is at field moisture capacity (1/3 bar moisture tension). Weight is determined after drying the soil at 105 degrees Celsius.

"NRCS" means Natural Resources Conservation Service, U.S. Department of Agriculture.

"MSHA" means the Mine Safety and Health Administration, U.S. Department of Labor.

"Mulch" means vegetation residues or other suitable materials that aid in soil stabilization and soil moisture conservation, thus providing microclimatic conditions suitable for germination and growth.

"Natural Hazard Lands" means, for the purposes of R645-103-300, geographic areas in which natural conditions exist which pose or, as a result of coal mining and reclamation operations, may pose a threat to the health, safety, or welfare of people, property or the environment, including areas subject to landslides, cave-ins, large or

encroaching sand dunes, severe wind or soil erosion, frequent flooding, avalanches, and areas of unstable geology.

"Net Worth" means total assets minus total liabilities and is equivalent to owners' equity.

"Non-commercial Building" means any building, other than an occupied residential dwelling, that, at the time the subsidence occurs, is used on a regular or temporary basis as a public building or community or institutional building as those terms are defined at R645-100-200. Any building used only for commercial agricultural, industrial, retail or other commercial enterprises is excluded.

"Noxious Plants" means species that have been included on the official Utah list of noxious plants.

"Occupied Dwelling" means any building that is currently being used on a regular or temporary basis for human habitation.

"Occupied Residential Dwelling and Structures Related Thereto" means, for purposes of R645-301, any building or other structure that, at the time the subsidence occurs, is used either temporarily, occasionally, seasonally, or permanently for human habitation. This term also includes any building, structure or facility installed on, above or below, or a combination thereof, the land surface if that building, structure or facility is adjunct to or used in connection with an occupied residential dwelling. Examples of such structures include, but are not limited to, garages; storage sheds and barns; greenhouses and related buildings; utilities and cables; fences and other enclosures; retaining walls; paved or improved patios, walks and driveways; septic sewage treatment facilities; and lot drainage and lawn and garden irrigation systems. Any structure used only for commercial agricultural, industrial, retail or other commercial purposes is excluded.

"Office" means Office of Surface Mining Reclamation and Enforcement, U.S. Department of the Interior.

"Operator" means any person engaged in coal mining who removes, or intends to remove, more than 250 tons of coal from the earth or from coal refuse piles by mining within 12 consecutive calendar months in any one location.

"Other minerals" means, for the purpose of R645-106, any commercially valuable substance mined for its mineral value, excluding coal, topsoil, waste and fill material.

"Other Treatment Facilities" means, for the purposes of R645-301-356.300, R645-301-356.400, R645-301- 513.200, R645-301-742.200 through R645-301-742.240, and R645-301-763, any chemical treatments, such as flocculation or neutralization, or mechanical structures, such as clarifiers or precipitators, that have a point source discharge and that are utilized to prevent additional contribution of dissolved or suspended solids to stream flow or runoff outside the permit area or to comply with all applicable State and Federal water quality laws and regulations.

"Outslope" means the face of the spoil or embankment sloping downward from the highest elevation to the toe.

"Overburden" means material of any nature, consolidated or unconsolidated, that overlies a coal deposit, excluding topsoil.

"Owned or controlled" and "owns or controls" means any one or a combination of the relationships specified in paragraphs (a) and (b) of this definition:

- (a)(1) Being a permittee of a coal mining and reclamation operation;

(2) Based on the instrument of ownership or voting securities, owning of record in excess of 50 percent of an entity; or

(3) Having any other relationship which gives one person authority directly or indirectly to determine the manner in which an applicant, an operator, or other entity conducts coal mining and reclamation operations.

(b) The following relationships are presumed to constitute ownership or control unless a person can demonstrate that the person subject to the presumption does not in fact have the authority directly or indirectly to determine the manner in which the relevant coal mining and reclamation operation is conducted:

(1) Being an officer or director of an entity;

(2) Being the operator of a coal mining and reclamation operation;

(3) Having the ability to commit the financial or real property assets or working resources of an entity;

(4) Being a general partner in a partnership;

(5) Based on the instruments of ownership or the voting securities of a corporate entity, owning of record 10 through 50 percent of the entity; or

(6) Owning or controlling coal to be mined by another person under a lease, sublease, or other contract and having the right to receive such coal after mining or having authority to determine the manner in which that person or another person conducts coal mining and reclamation operation.

"Parent Corporation" means corporation which owns or controls the applicant.

"Perennial Stream" means a stream or part of a stream that flows continuously during all of the calendar year as a result of groundwater discharge or surface runoff. The term does not include intermittent stream or ephemeral stream.

"Performance Bond" means a surety bond, collateral bond, or self-bond, or a combination thereof, by which a permittee assures faithful performance of all the requirements of the Act, the R645 Rules, the State Program, and the requirements of the permit and reclamation plan.

"Performing Any Function or Duty Under This Act" means those decisions or actions, which if performed or not performed by a board member or employee, affect the State Program under the Act.

"Permanent Diversion" means a diversion remaining after coal mining and reclamation operations are completed which has been approved for retention by the Division and other appropriate state and federal agencies.

"Permanent Impoundment" means an impoundment which is approved by the Division and, if required, by other state and federal agencies for retention as part of the postmining land use.

"Permit" means a permit to conduct coal mining and reclamation operations issued by the Division pursuant to the State Program. For purposes of the federal lands program, permit means a permit issued by the Division pursuant to the cooperative agreement with the Secretary.

"Permit Area" means the area of land, indicated on the approved map submitted by the operator with his or her application, required to be covered by the operator's performance bond under R645-301-800, and which will include the area of land upon which the operator proposes to conduct coal mining and reclamation operations under the permit, including all disturbed areas, provided that areas

adequately bonded under another valid permit may be excluded from the permit area.

"Permit Change" means any coal mining and reclamation operations not previously approved by the Division in the Permit or in any previously-approved permit change under R645-303-220.

"Permittee" means a person holding, or required by the Act or the R645 Rules to hold, a permit to conduct coal mining and reclamation operations issued by the Division pursuant to the State Program or, under the cooperative agreement pursuant to Section 523 of P.L. 95-87, by the Director of the Office and the Division.

"Person" means an individual, Indian tribe when conducting coal mining and reclamation operations on non-Indian lands, partnership, association, society, joint venture, joint-stock company, firm, company, corporation, cooperative or other business organization, and any agency, unit, or instrumentality of federal, state, or local government including any publicly owned utility or publicly owned corporation of federal, state, or local governments.

"Person Having an Interest Which Is or May Be Adversely Affected or Person With a Valid Legal Interest" means any person (a) who uses any resource of economic, recreational, aesthetic, or environmental value that may be adversely affected by coal exploration or coal mining and reclamation operations or any related action of the Division, or the Board, or (b) whose property is or may be adversely affected by coal exploration or coal mining and reclamation operations or any related action of the Division or the Board.

"Precipitation Event" means a quantity of water resulting from drizzle, rain, snow, sleet, or hail in a limited period of time. It may be expressed in terms of recurrence interval. As used in the R645 Rules, precipitation event also includes that quantity of water emanating from snow cover as snowmelt in a limited period of time.

"Previously Mined Area" means land affected by coal mining and reclamation operations prior to August 3, 1977, that has not been reclaimed to the standards of Ut. Admin. R645 or 30 CFR chapter VII.

"Prime Farmland" means those lands which are defined by the Secretary of Agriculture in 7 CFR 657 (Federal Register Vol. 4 No. 21) and which have historically been used for cropland as that phrase is defined herein.

"Principal Shareholder" means any person who is the record or beneficial owner of ten percent or more of any class of voting stock.

"Prohibited Financial Interest" means any direct or indirect financial interest in any coal mining and reclamation operation.

"Property to be Mined" means both the surface estates and mineral estates within the permit area and the area covered by underground workings.

"Public Building" means any structure that is owned or leased and principally used by a government agency for public business or meetings.

"Public Office" means a facility under the direction and control of a governmental entity which is open to public access on a regular basis during reasonable business hours.

"Public Park" means an area or portion of an area dedicated or designated by any federal, state, or local agency primarily for public recreational use, whether or not such use is limited to certain times or days, including any land leased, reserved, or held open to the public because of that use.

"Public Road", for the purpose of part R645-103-200, R645-301-521.123, and R645-301-521.133 means a road (a) which has been designated as a public road pursuant to the laws of the jurisdiction in which it is located; (b) which is maintained with public funds in a manner similar to other public roads of the same classification within the jurisdiction; (c) for which there is substantial (more than incidental) public use; and (d) which meets road construction standards for other public roads of the same classification in the local jurisdiction.

"Publicly Owned Park" means a public park that is owned by a federal, state, or local governmental entity.

"Qualified Laboratory" means, for the purposes of R645-302-290, a designated public agency, private firm, institution, or analytical laboratory which can prepare the required determination of probable hydrologic consequences, statement of results of test borings or core samplings under SOAP, or other services as specified at R645-302- 299 and which meet the standards of R645-302-295.100.

"Rangeland" means land on which the natural potential (climax) plant cover is principally native grasses, forbs, and shrubs valuable for forage. This land includes natural grasslands and savannahs, such as prairies, and juniper savannahs, such as brushlands. Except for brush control, management is primarily achieved by regulating the intensity of grazing and season of use.

"Reasonably Available Spoil" means spoil and suitable coal mine waste material generated by the remining activity or other spoil or suitable coal mine waste material located in the permit area that is accessible and available for use, and that when rehandled will not cause a hazard to public safety or significant damage to the environment.

"Recharge Capacity" means the ability of the soils and underlying materials to allow precipitation and runoff to infiltrate and reach the zone of saturation.

"Reclamation" means those actions taken to restore mined land as required by the R645 Rules to a postmining land use approved by the Division.

"Recurrence Interval" means the interval of time in which a precipitation event is expected to occur once, on the average. For example, the 10-year 24-hour precipitation event would be that 24-hour precipitation event expected to occur on the average once in ten years.

"Reference Area" means a land unit maintained under appropriate management for the purpose of measuring vegetation ground cover, productivity, and plant species diversity that are produced naturally or by crop production methods approved by the Division. Reference areas must be representative of geology, soil, slope, and vegetation in the permit area.

"Refuse Pile" means a surface deposit of coal mine waste that does not impound water, slurry, or other liquid or semiliquid material.

"Remining" means conducting coal mining and reclamation operations which affect previously mined areas.

"Renewable Resource Lands" means aquifers and areas for the recharge of aquifers and other underground waters, areas for agricultural or silvicultural production of food and fiber, and grazing lands. For the purposes of R645- 103, RENEWABLE RESOURCE LANDS means geographic areas which contribute significantly to the long-range productivity of water supply or of food or fiber products, such lands to include aquifers and aquifer recharge areas.

"Renewal of a Permit" means, for the purposes of R645-302-300, a decision by

the Division to extend the time by which the permittee may complete mining within the boundaries of the original permit.

"Replacement of Water Supply" means, with respect to State-appropriated water supplies contaminated, diminished, or interrupted by coal mining and reclamation operations, provision of water supply on both a temporary and permanent basis equivalent to premining quantity and quality. Replacement includes provision of an equivalent water delivery system and payment of operation and maintenance costs in excess of customary and reasonable delivery costs for premining water supplies.

(a) Upon agreement by the permittee and the water supply owner, the obligation to pay such operation and maintenance costs may be satisfied by a one-time payment in an amount which covers the present worth of the increased annual operation and maintenance costs for a period agreed to by the permittee and the water supply owner.

(b) If the affected water supply was not needed for the land use in existence at the time of loss, contamination, or diminution, and if the supply is not needed to achieve the postmining land use, replacement requirements may be satisfied by demonstrating that a suitable alternative water source is available and could feasibly be developed. If the latter approach is selected, written concurrence must be obtained from the water supply owner.

"Road" means a surface right-of-way for purposes of travel by land vehicles used in coal mining and reclamation operations or coal exploration. A road consists of the entire area within the right-of-way, including the roadbed, shoulders, parking and side areas, approaches, structures, ditches, and surface. The term includes access and haul roads constructed, used, reconstructed, improved, or maintained for use in coal mining and reclamation operations or coal exploration, including use by coal hauling vehicles to and from transfer, processing, or storage areas. The term does not include ramps and routes of travel within the immediate mining area or within spoil or coal mine waste disposal areas.

"Safety Factor" means the ratio of the available shear strength to the developed shear stress, or the ratio of the sum of the resisting forces to the sum of the loading or driving forces, as determined by accepted engineering practices.

"Secretary" means the Secretary of the Department of Interior or his or her representative.

"Sedimentation Pond" means an impoundment used to remove solids from water in order to meet water quality standards or effluent limitations before the water leaves the permit area.

"Self Bond" means an indemnity agreement in a sum certain executed by the applicant or by the applicant and any corporate guarantor, and made payable to the Division with or without separate surety.

"Significant Forest Cover" means an existing plant community consisting predominantly of trees and other woody vegetation. The Secretary of Agriculture will decide on a case-by-case basis whether the forest cover is significant within those national forests in Utah.

"Significant, Imminent Environmental Harm to Land, Air, or Water Resources" means (a) the environmental harm has an adverse impact on land, air, or water resources which resources include, but are not limited to, plant and animal life; (b) an environmental harm is imminent, if a condition, practice, or violation exists which (i) is causing such harm, or (ii) may reasonably be expected to cause such harm at any time before the end of the reasonable abatement time that would be set

under 40-10-22 of the Act, and (c) an environmental harm is significant if that harm is appreciable and not immediately repairable.

"Significant Recreational, Timber, Economic, or Other Values Incompatible With Coal Mining and Reclamation Operations" means those values to be evaluated for their significance which could be damaged by, and are not capable of existing together with, coal mining and reclamation operations because of the undesirable effects mining would have on those values, either on the area included in the permit application or on other affected areas. Those values to be evaluated for their importance include (a) recreation, including hiking, boating, camping, skiing, or other related outdoor activities, (b) timber management and silviculture, (c) agriculture, aquaculture, or production of other natural, processed, or manufactured products which enter commerce, and (d) scenic, historic, archaeological, aesthetic, fish, wildlife, plants, or cultural interests.

"Siltation Structure" means, for the purposes of R645-301-356.300, R645-301-356.400, R645-301-513.200, R645-301-742.200 through R645-301-742.240, and R645-301-763, a sedimentation pond, a series of sedimentation ponds or other treatment facilities.

"Slope" means average inclination of a surface, measured from the horizontal, generally expressed as the ratio of a unit of vertical distance to a given number of units of horizontal distance (e.g., 1v:5h). It may also be expressed as a percent or in degrees.

"SOAP" means Small Operator Assistance Program.

"Soil Horizons" means contrasting layers of soil parallel or nearly parallel to the land surface. Soil horizons are differentiated on the basis of field characteristics and laboratory data. The four major soil horizons are"

A HORIZON - The uppermost mineral layer, often called the surface soil. It is the part of the soil in which organic matter is most abundant, and leaching of soluble or suspended particles is typically the greatest.

E HORIZON - The layer commonly near the surface below an A horizon and above a B horizon. An E horizon is most commonly differentiated from an overlying A horizon by lighter color and generally has measurably less organic matter than the A horizon. An E horizon is most commonly differentiated from an underlying B horizon in the same sequum by color of higher value or lower chroma, by coarser texture, or by a combination of these properties.

B HORIZON - The layer that typically is immediately beneath the E horizon and often called the subsoil. This middle layer commonly contains more clay, iron, or aluminum than the A, E, or C horizons.

C HORIZON - The deepest layer of soil profile. It consists of loose material or weathered rock that is relatively unaffected by biologic activity.

"Soil Survey" means a field and other investigations resulting in a map showing the geographic distribution of different kinds of soils and an accompanying report that describes, classifies, and interprets such soils for use. Soil surveys must meet the standards of the National Cooperative Soil Survey as incorporated by reference in R645- 302-314.100.

"Spoil" means overburden that has been removed during coal mining and reclamation operations.

"Stabilize" means to control movement of soil, spoil piles, or areas of disturbed earth by modifying the geometry of the mass, or by otherwise modifying physical or

chemical properties, such as by providing a protective surface coating.

"State Program" means the program established by the state of Utah and approved by the Secretary of the Department of the Interior pursuant to the Federal Act and the Act to regulate coal mining and reclamation operations on non-Indian and non-federal lands within Utah, according to the Federal Act, the Act and the R645 Rules. Pursuant to the cooperative agreement between the state of Utah and the Office, the State Program applies to federal lands in accordance with the terms of the cooperative agreement.

"Steep Slope" means any slope of more than 20 degrees or such lesser slope as may be designated by the Division after consideration of soil, climate, and other characteristics of a region or Utah.

"Subirrigation" means, with respect to ALLUVIAL VALLEY FLOORS, the supplying of water to plants from underneath or from a semisaturated or saturated subsurface zone where water is available for use by vegetation.

"Substantial Legal and Financial Commitments in a Coal Mining and Reclamation Operation" means, for the purposes of R645-103-300, significant investments that have been made on the basis of a long-term coal contract in power plants, railroads, coal-handling, preparation, extraction or storage facilities, and other capital-intensive activities. An example would be an existing mine not actually producing coal, but in a substantial stage of development prior to production. Costs of acquiring the coal in place or the right to mine it without an existing mine, as described in the above example, alone are not sufficient to constitute substantial legal and financial commitments.

"Substantially Disturb" means, for purposes of COAL EXPLORATION, to significantly impact land or water resources by blasting; by removal of vegetation, topsoil, or overburden; by construction of roads or other access routes; by placement of excavated earth or waste material on the natural land surface or by other such activities; or to remove more than 250 tons of coal.

"Successor in Interest" means any person who succeeds to rights granted under a permit, by transfer, assignment, or sale of those rights.

"Surety Bond" means an indemnity agreement in a sum certain payable to the Division, executed by the permittee as principal and which is supported by the performance guarantee of a corporation licensed to do business as a surety in Utah.

"Surface Operations and Impacts Incident to an Underground Coal Mine" means all operations involved in or related to UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES which are either conducted on the surface of the land, produce changes in the land surface or disturb the surface, air, or water resources of the area including all activities listed in 40-10-3(18) of the Act and the definition of underground mining activities appearing herein.

"SURFACE COAL MINING AND RECLAMATION ACTIVITIES" means those coal mining and reclamation operations incident to the extraction of coal from the earth by removing the materials over a coal seam, before recovering the coal, by auger coal mining, or by recovery of coal from a deposit that is not in its original geologic location.

"Suspended Solids or Nonfilterable Residue, Expressed as Milligrams Per Liter" means organic or inorganic materials carried or held in suspension in water which are retained by a standard glass fiber filter in the procedure outlined by the Environmental Protection Agency's regulation for waste water and analyses (40 CFR Part 136).

"Tangible Net Worth" means net worth minus intangibles such as goodwill and rights to patents or royalties.

"Temporary Diversion" means a diversion of a stream, or overland flow, which is used during coal exploration or coal mining and reclamation operations and not approved by the Division to remain after reclamation as part of the approved postmining land use.

"Temporary Impoundment" means an impoundment used during coal mining and reclamation operations, but not approved by the Division to remain as part of the approved postmining land use.

"Ton" means 2,000 pounds avoirdupois (.90718 metric ton).

"Topsoil" means the A and E soil horizon layers of the four major soil horizons.

"Toxic-Forming Materials" means earth materials or wastes which, if acted upon by air, water, weathering, or microbiological processes are likely to produce chemical or physical conditions in soils or water that are detrimental to biota or uses of water.

"Toxic Mine Drainage" means water that is discharged from active or abandoned mines or other areas affected by coal exploration or coal mining and reclamation operations which contains a substance that through chemical action or physical effects is likely to kill, injure, or impair biota commonly present in the area that might be exposed to it.

"Transfer, Assignment, or Sale of Permit Rights" means a change in ownership or other effective control over the right to conduct coal mining and reclamation operations under a permit issued by the Division.

"UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES" means coal mining and reclamation operations incident to the extraction of coal by underground methods including a combination of (a) underground extraction of coal or in situ processing, construction use, maintenance, and reclamation of roads, above-ground repair areas, storage areas, processing areas, shipping areas, areas upon which are sited support facilities including hoist and ventilating ducts, areas utilized for the disposal and storage of waste, and areas on which materials incident to underground mining operations are placed; and (b) underground operations such as underground construction, operation, and reclamation of shafts, adits, underground support facilities, in situ processing, and underground mining, hauling, storage, and blasting.

"Underground Development Waste" means waste-rock mixtures of coal, shale, claystone, siltstone, sandstone, limestone, or related materials that are excavated, moved, and disposed of from underground workings in connection with UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES.

"Undeveloped Rangeland" means, for purposes of ALLUVIAL VALLEY FLOORS, lands where the use is not specifically controlled and managed.

"Unwarranted Failure to Comply" means the failure of the permittee to prevent the occurrence of any violation of the State Program or any permit condition due to indifference, lack of diligence, or lack of reasonable care, or the failure to abate any violation of such permit of the Act due to indifference, lack of diligence, or lack of reasonable care.

"Upland Areas" means, with respect to ALLUVIAL VALLEY FLOORS, those geomorphic features located outside the floodplain and terrace complex such as isolated higher terraces, alluvial fans, pediment surfaces, landslide deposits, and

surfaces covered with residuum, mud flows, or debris flows, as well as highland areas underlain by bedrock and covered by residual weathered material or debris deposited by sheetwash, rillwash, or windblown material.

"Valid Existing Rights" means (a) for haul roads" (i) a recorded right of way, recorded easement, or a permit for a coal haul road recorded as of August 3, 1977, or (ii) any other road in existence as of August 3, 1977; (b) a person possesses valid existing rights if the person proposing to conduct coal mining and reclamation operations can demonstrate that property rights to the coal had been acquired prior to August 3, 1977 and that the coal is both needed for, and immediately adjacent to, an ongoing coal mining and reclamation operation which existed on August 3, 1977. A determination that coal is "needed for" will be based upon a finding that the extension of mining is essential to make the coal mining and reclamation operation as a whole economically viable; (c) where an area comes under the protection of 40-10-24 of the Act after August 3, 1977, valid existing rights will be found if on the date the protection comes into existence, a validly authorized coal mining and reclamation operation exists on that area; and (d) interpretation of the terms of the document relied upon to establish the rights to which the standard of portions (a) and (c) of this definition applies will be based either upon applicable Utah statutory or case law concerning interpretation of documents conveying mineral rights or, where no applicable Utah law exists, upon the usage and custom at the time and place it came into existence.

"Valley Fill" means a fill structure consisting of any material, other than organic material, that is placed in a valley where side slopes of the existing valley, measured at the steepest point, are greater than 20 degrees, or where the average slope of the profile of the valley from the toe of the fill to the top of the fill is greater than ten degrees.

"Violation, Failure, or Refusal" means for the purposes of R645-402, (1) A violation of a condition of a permit issued under the State Program, or (2) A failure or refusal to comply with any order issued under UCA 40-10-22, or any order incorporated in a final decision issued under UCA 40-10-20(2) or R645-104-500.

"Water Supply", "State-appropriated Water", and "State-appropriated Water Supply" are all synonymous terms and mean, for the purposes of the R645 Rules, state appropriated water rights which are recognized by the Utah Constitution or Utah Code.

"Violation Notice" means any written notification from a governmental entity of a violation of law, whether by letter, memorandum, legal or administrative pleading, or other written communication.

"Water Table" means the upper surface of a zone of saturation where the body of ground water is not confined by an overlying impermeable zone.

"Willfully" means for the purposes of R645-402, that an individual acted (1) either intentionally, voluntarily, or consciously, and (2) with intentional disregard or plain indifference to legal requirements in authorizing, ordering, or carrying out a corporate permittee's action or omission that constituted a violation, failure, or refusal.

"Willful Violation" means an act or omission which violates the State Program or any permit condition, committed by a person who intends the result which actually occurs.

R645-100-300. Responsibility.

310. The Division is responsible for the regulation of coal mining and reclamation

R645-301-510 through R645-301-553.

R645-301-600. Geology.

The rules in R645-301-600 present the requirements for information related to geology which is to be included in each permit application.

610. Introduction.

611. General Requirements. Each permit application will include descriptions of:

611.100. The geology within and adjacent to the permit area as given under R645-301-621 through R645-301-627; and

611.200. Proposed operations given under R645-301-630.

612. All cross sections, maps and plans as required by R645-301-622 will be prepared and certified as described under R645-301-512.100

620. Environmental Description.

621. General Requirements. Each permit application will include a description of the geology within the proposed permit and adjacent areas that may be affected or impacted by the proposed coal mining and reclamation operation.

622. Cross Sections, Maps and Plans. The application will include cross sections, maps and plans showing:

622.100. Elevations and locations of test borings and core samplings;

622.200. Nature, depth, and thickness of the coal seams to be mined, any coal or rider seams above the seam to be mined, each stratum of the overburden, and the stratum immediately below the lowest coal seam to be mined;

622.300. All coal crop lines and the strike and dip of the coal to be mined within the proposed permit area; and

622.400. Location, and depth if available, of gas and oil wells within the proposed permit area.

623. Each application will include geologic information in sufficient detail to assist in:

623.100. Determining all potentially acid- or toxic-forming strata down to and including the stratum immediately below the coal seam to be mined;

623.200. Determining whether reclamation as required by R645-301 and R645-302 can be accomplished; and

623.300. For the purposes of UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES preparing the subsidence control plan described under R645-301-525 and R645-521-142.

624. Geologic information will include, at a minimum, the following:

624.100. A description of the geology of the proposed permit and adjacent areas down to and including the deeper of either the stratum immediately below the lowest coal seam to be mined or any aquifer below the lowest coal seam to be mined which may be adversely impacted by mining. This description will include the regional and structural geology of the permit and adjacent areas, and other parameters which influence the required reclamation and it will also show how the regional and structural geology may affect the occurrence, availability, movement, quantity and quality of potentially impacted surface and ground water. It will be

based on:

624.110. The cross sections, maps, and plans required by R645-301-622.100 through R645-301- 622.400.

624.120. The information obtained under R645-301-624.200, R645-301-624.300 and R645-301-625; and

624.130. Geologic literature and practices.

624.200. For the purposes of UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES, any portion of a permit area in which the strata down to the coal seam to be mined will be removed or are already exposed, and for the purposes of SURFACE COAL MINING AND RECLAMATION ACTIVITIES, samples will be collected and analyzed from test borings; drill cores; or fresh, unweathered, uncontaminated samples from rock outcrops down to and including the deeper of either the stratum immediately below the lowest coal seam to be mined or any aquifer below the lowest coal seam to be mined which may be adversely impacted by mining. The analyses will result in the following:

624.210. Logs showing the lithologic characteristics including physical properties and thickness of each stratum and location of ground water where occurring;

624.220. Chemical analyses identifying those strata that may contain acid- or toxic-forming, or alkalinity-producing materials and to determine their content except that the Division may find that the analysis for alkalinity-producing material is unnecessary; and

624.230. Chemical analysis of the coal seam for acid- or toxic-forming materials, including the total sulfur and pyritic sulfur, except that the Division may find that the analysis of pyritic sulfur content is unnecessary.

624.300. For lands within the permit and adjacent areas of UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES where the strata above the coal seam to be mined will not be removed, samples will be collected and analyzed from test borings or drill cores to provide the following data:

624.310. Logs of drill holes showing the lithologic characteristics, including physical properties and thickness of each stratum that may be impacted, and location of ground water where occurring;

624.320. Chemical analyses for acid- or toxic-forming or alkalinity-producing materials and their content in the strata immediately above and below the coal seam to be mined;

624.330. Chemical analyses of the coal seam for acid- or toxic-forming materials, including the total sulfur and pyritic sulfur, except that the Division may find that the analysis of pyrite sulfur content is unnecessary; and

624.340. For standard room and pillar mining operations, the thickness and engineering properties of clays or soft rock such as clay shale, if any, in the stratum immediately above and below each coal seam to be mined.

625. If determined to be necessary to protect the hydrologic balance, to minimize or prevent subsidence, or to meet the performance standards of R645-301 and R645-302, the Division may require the collection, analysis and description of geologic information in addition to that required by R645-301-624.

626. An applicant may request the Division to waive in whole or in part the requirements of R645-301- 624.200 and R645-301-624.300. The waiver may be granted only if the Division finds in writing that the collection and analysis of such

data is unnecessary because other information having equal value or effect is available to the Division in a satisfactory form.

627. An application for a permit to conduct UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES will include, at a minimum, a description of overburden thickness and lithology.

630. Operation Plan.

631. Casing and Sealing of Exploration Holes and Boreholes. Each permit application will include a description of the methods used to backfill, plug, case, cap, seal or otherwise manage exploration holes or boreholes to prevent acid or toxic drainage from entering water resources, minimize disturbance to the prevailing hydrologic balance and to ensure the safety of people, livestock, fish and wildlife, and machinery in the permit and adjacent area. Each exploration hole or borehole that is uncovered or exposed by coal mining and reclamation operations within the permit area will be permanently closed, unless approved for water monitoring or otherwise managed in a manner approved by the Division. Use of an exploration borehole as a monitoring or water well must meet the provisions of R645-301-551 and R645-301-731. The requirements of R645-301-631 do not apply to boreholes drilled for the purpose of blasting.

631.100. Temporary Casing and Sealing of Drilled Holes. Each exploration borehole, other drill hole or borehole which has been identified in the approved permit application for use to return underground development waste, coal processing waste or water to underground workings or to be used to monitor ground water conditions will be temporarily sealed before use and for the purposes of SURFACE COAL MINING AND RECLAMATION ACTIVITIES, protected during use by barricades, or fences, or other protective devices approved by the Division. These protective devices will be periodically inspected and maintained in good operating condition by the operator conducting surface coal mining and reclamation activities.

631.200. Permanent Casing and Sealing of Exploration Holes and Boreholes. When no longer needed for monitoring or other use approved by the Division upon a finding of no adverse environmental or health and safety effect, or unless approved for transfer as a water well under R645-301-731.400, each exploration hole or borehole will be plugged, capped, sealed, backfilled or otherwise properly managed under R645-301-551, R645-301-631 and consistent with 30 CFR 75.1711. Permanent closure methods will be designed to prevent access to the mine workings by people, livestock, fish and wildlife, and machinery and to keep acid or other toxic drainage from entering water resources.

632. Subsidence Monitoring. Each application for a permit to conduct UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES will, except where planned subsidence is projected to be used, include as part of the subsidence monitoring plan described under R645-301-525:

632.100. A determination of the commencement and degree of subsidence so other appropriate measures can be taken to prevent or reduce material damage; and

632.200. A map showing the locations of subsidence monitoring points within and adjacent to the permit area.

640. Performance Standards.

641. All exploration holes and boreholes will be permanently cased and sealed according to the requirements of R645-301-631 and R645-301-631.200.

642. All monuments and surface markers used as subsidence monitoring points and identified under R645-301-632.200 will be reclaimed in accordance with

R645-301-521.210.

R645-301-700. Hydrology.

710. Introduction.

711. General Requirements. Each permit application will include descriptions of:

711.100. Existing hydrologic resources as given under R645-301-720.

711.200. Proposed operations and potential impacts to the hydrologic balance as given under R645-301-730.

711.300. The methods and calculations utilized to achieve compliance with hydrologic design criteria and plans given under R645-301-740.

711.400. Applicable hydrologic performance standards as given under R645-301-750.

711.500. Reclamation activities as given under R645-301-760.

712. Certification. All cross sections, maps and plans required by R645-301-722 as appropriate, and R645-301-731.700 will be prepared and certified according to R645-301-512.

713. Inspection. Impoundments will be inspected as described under R645-301-514.300.

720. Environmental Description.

721. General Requirements. Each permit application will include a description of the existing, premining hydrologic resources within the proposed permit and adjacent areas that may be affected or impacted by the proposed coal mining and reclamation operation.

722. Cross Sections and Maps. The application will include cross sections and maps showing:

722.100. Location and extent of subsurface water, if encountered, within the proposed permit or adjacent areas. For UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES, location and extent will include, but not limited to areal and vertical distribution of aquifers, and portrayal of seasonal differences of head in different aquifers on cross-sections and contour maps;

722.200. Location of surface water bodies such as streams, lakes, ponds and springs, constructed or natural drains, and irrigation ditches within the proposed permit and adjacent areas;

722.300. Elevations and locations of monitoring stations used to gather baseline data on water quality and quantity in preparation of the application;

722.400. Location and depth, if available, of water wells in the permit area and adjacent area; and

722.500. Sufficient slope measurements or contour maps to adequately represent the existing land surface configuration of proposed disturbed areas for UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES and the proposed permit area for SURFACE COAL MINING AND RECLAMATION ACTIVITIES will be measured and recorded to take into account natural variations in slope, to provide accurate representation of the range of natural slopes and reflect geomorphic differences of the area to be disturbed.

723. Sampling and Analysis. All water quality analyses performed to meet the

requirements of R645- 301-723 through R645-301-724.300, R645-301-724.500, R645-301-725 through R645-301-731, and R645-301-731.210 through R645-301-731.223 will be conducted according to the methodology in the current edition of "Standard Methods for the Examination of Water and Wastewater" or the methodology in 40 CFR Parts 136 and 434. Water quality sampling performed to meet the requirements of R645-301-723 through R645-301-724.300, R645-301-724.500, R645-301-725 through R645-301-731, and R645-301- 731.210 through R645-301-731.223 will be conducted according to either methodology listed above when feasible. "Standard Methods for the Examination of Water and Wastewater" is a joint publication of the American Public Health Association, the American Water Works Association, and the Water Pollution Control Federation and is available from the American Public Health Association, 1015 Fifteenth Street, NW, Washington, D. C. 20036.

724. Baseline Information. The application will include the following baseline hydrologic, geologic and climatologic information, and any additional information required by the Division.

724.100. Ground Water Information. The location and ownership for the permit and adjacent areas of existing wells, springs and other ground-water resources, seasonal quality and quantity of ground water, and usage. Water quality descriptions will include, at a minimum, total dissolved solids or specific conductance corrected to 25 degrees C, pH, total iron and total manganese. Ground-water quantity descriptions will include, at a minimum, approximate rates of discharge or usage and depth to the water in the coal seam, and each water-bearing stratum above and potentially impacted stratum below the coal seam.

724.200. Surface water information. The name, location, ownership and description of all surface- water bodies such as streams, lakes and impoundments, the location of any discharge into any surface-water body in the proposed permit and adjacent areas, and information on surface-water quality and quantity sufficient to demonstrate seasonal variation and water usage. Water quality descriptions will include, at a minimum, baseline information on total suspended solids, total dissolved solids or specific conductance corrected to 25 degrees C, pH, total iron and total manganese. Baseline acidity and alkalinity information will be provided if there is a potential for acid drainage from the proposed mining operation. Water quantity descriptions will include, at a minimum, baseline information on seasonal flow rates.

724.300. Geologic Information. Each application will include geologic information in sufficient detail, as given under R645-301-624, to assist in:

724.310. Determining the probable hydrologic consequences of the operation upon the quality and quantity of surface and ground water in the permit and adjacent areas, including the extent to which surface- and ground- water monitoring is necessary; and

724.320. Determining whether reclamation as required by the R645 Rules can be accomplished and whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

724.400. Climatological Information.

724.410. When requested by the Division, the permit application will contain a statement of the climatological factors that are representative of the proposed permit area, including:

724.411. The average seasonal precipitation;

724.412. The average direction and velocity of prevailing winds; and

724.413. Seasonal temperature ranges.

724.420. The Division may request such additional data as deemed necessary to ensure compliance with the requirements of R645-301 and R645-302.

724.500. Supplemental information. If the determination of the PHC required by R645-301-728 indicates that adverse impacts on or off the proposed permit area may occur to the hydrologic balance, or that acid-forming or toxic-forming material is present that may result in the contamination of ground-water or surface-water supplies, then information supplemental to that required under R645-301-724.100 and R645-301-724.200 will be provided to evaluate such probable hydrologic consequences and to plan remedial and reclamation activities. Such supplemental information may be based upon drilling, aquifer tests, hydrogeologic analysis of the water-bearing strata, flood flows, or analysis of other water quality or quantity characteristics.

724.700. Each permit application that proposes to conduct coal mining and reclamation operations within a valley holding a stream or in a location where the permit area or adjacent area includes any stream will meet the requirements of R645-302-320.

725. Baseline Cumulative Impact Area Information.

725.100. Hydrologic and geologic information for the cumulative impact area necessary to assess the probable cumulative hydrologic impacts of the proposed coal mining and reclamation operation and all anticipated coal mining and reclamation operations on surface- and ground-water systems as required by R645-301-729 will be provided to the Division if available from appropriate federal or state agencies.

725.200. If this information is not available from such agencies, then the applicant may gather and submit this information to the Division as part of the permit application.

725.300. The permit will not be approved until the necessary hydrologic and geologic information is available to the Division.

726. Modeling. The use of modeling techniques, interpolation or statistical techniques may be included as part of the permit application, but actual surface- and ground-water information may be required by the Division for each site even when such techniques are used.

727. Alternative Water Source Information. If the probable hydrologic consequences determination required by R645-301-728 indicates that the proposed SURFACE COAL MINING AND RECLAMATION ACTIVITY may proximately result in contamination, diminution, or interruption of an underground or surface source of water within the proposed permit or adjacent areas which is used for domestic, agricultural, industrial or other legitimate purpose, then the application will contain information on water availability and alternative water sources, including the suitability of alternative water sources for existing premining uses and approved postmining land uses.

728. Probable Hydrologic Consequences (PHC) Determination.

728.100. The permit application will contain a determination of the PHC of the proposed coal mining and reclamation operation upon the quality and quantity of surface and ground water under seasonal flow conditions for the proposed permit and adjacent areas.

728.200. The PHC determination will be based on baseline hydrologic, geologic and other information collected for the permit application and may include data

statistically representative of the site.

728.300. The PHC determination will include findings on:

728.310. Whether adverse impacts may occur to the hydrologic balance;

728.320. Whether acid-forming or toxic-forming materials are present that could result in the contamination of surface- or ground-water supplies;

728.330. What impact the proposed coal mining and reclamation operation will have on:

728.331. Sediment yield from the disturbed area;

728.332. Acidity, total suspended and dissolved solids and other important water quality parameters of local impact;

728.333. Flooding or streamflow alteration;

728.334. Ground-water and surface-water availability; and

728.335. Other characteristics as required by the Division; and

728.340. Whether the proposed SURFACE COAL MINING AND RECLAMATION ACTIVITY will proximately result in contamination, diminution or interruption of an underground or surface source of water within the proposed permit or adjacent areas which is used for domestic, agricultural, industrial or other legitimate purpose; Or

728.350. Whether the UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES conducted after October 24, 1992 may result in contamination, diminution or interruption of State-appropriated Water in existence within the proposed permit or adjacent areas at the time the application is submitted.

728.400. An application for a permit revision will be reviewed by the Division to determine whether a new or updated PHC determination will be required.

729. Cumulative Hydrologic Impact Assessment (CHIA).

729.100. The Division will provide an assessment of the probable cumulative hydrologic impacts of the proposed coal mining and reclamation operation and all anticipated coal mining and reclamation operations upon surface- and ground-water systems in the cumulative impact area. The CHIA will be sufficient to determine, for purposes of permit approval whether the proposed coal mining and reclamation operation has been designed to prevent material damage to the hydrologic balance outside the permit area. The Division may allow the applicant to submit data and analyses relevant to the CHIA with the permit application.

729.200. An application for a permit revision will be reviewed by the Division to determine whether a new or updated CHIA will be required.

730. Operation Plan.

731. General Requirements. The permit application will include a plan, with maps and descriptions, indicating how the relevant requirements of R645-301-730, R645-301-740, R645-301-750 and R645-301-760 will be met. The plan will be specific to the local hydrologic conditions. It will contain the steps to be taken during coal mining and reclamation operations through bond release to minimize disturbance to the hydrologic balance within the permit and adjacent areas; to prevent material damage outside the permit area; to support approved postmining land use in accordance with the terms and conditions of the approved permit and performance standards of R645-301-750; to comply with the Clean Water Act (33

U.S.C. 1251 et seq.); and to meet applicable federal and Utah water quality laws and regulations. The plan will include the measures to be taken to: avoid acid or toxic drainage; prevent to the extent possible using the best technology currently available, additional contributions of suspended solids to streamflow; provide water treatment facilities when needed; and control drainage. For the purposes of SURFACE COAL MINING AND RECLAMATION ACTIVITIES the plan will include measures to be taken to protect or replace water rights and restore approximate premining recharge capacity. The plan will specifically address any potential adverse hydrologic consequences identified in the PHC determination prepared under R645-301-728 and will include preventative and remedial measures.

The Division may require additional preventative, remedial or monitoring measures to assure that material damage to the hydrologic balance outside the permit area is prevented. Coal mining and reclamation operations that minimize water pollution and changes in flow will be used in preference to water treatment.

731.100. Hydrologic-Balance Protection.

731.110. Ground-Water Protection. In order to protect the hydrologic balance, coal mining and reclamation operations will be conducted according to the plan approved under R645-301-731 and the following:

731.111. Ground-water quality will be protected by handling earth materials and runoff in a manner that minimizes acidic, toxic or other harmful infiltration to ground-water systems and by managing excavations and other disturbances to prevent or control the discharge of pollutants into the ground water; and

731.112. For the purposes of SURFACE COAL MINING AND RECLAMATION ACTIVITIES ground-water quantity will be protected by handling earth materials and runoff in a manner that will restore approximate premining recharge capacity of the reclaimed area as a whole, excluding coal mine waste disposal areas and fills, so as to allow the movement of water to the ground-water system.

731.120. Surface-Water Protection. In order to protect the hydrologic balance, coal mining and reclamation operations will be conducted according to the plan approved under R645-301-731 and the following:

731.121. Surface-water quality will be protected by handling earth materials, ground-water discharges and runoff in a manner that minimizes the formation of acidic or toxic drainage; prevents, to the extent possible using the best technology currently available, additional contributions of suspended solids to streamflow outside the permit area; and, otherwise prevent water pollution. If drainage control, restabilization and revegetation of disturbed areas, diversion of runoff, mulching or other reclamation and remedial practices are not adequate to meet the requirements of R645-301-731.100 through R645-301-731.522, R645-301-731.800 and R645-301-751, the operator will use and maintain the necessary water treatment facilities or water quality controls; and

731.122. Surface-water quantity and flow rates will be protected by handling earth materials and runoff in accordance with the steps outlined in the plan approved under R645-301-731.

731.200. Water Monitoring.

731.210. Ground-Water Monitoring. Ground-water monitoring will be conducted according to the plan approved under R645-301-731.200 and the following:

731.211. The permit application will include a ground-water monitoring plan based upon the PHC determination required under R645-301-728 and the analysis of all baseline hydrologic, geologic and other information in the permit application.

The plan will provide for the monitoring of parameters that relate to the suitability of the ground water for current and approved postmining land uses and to the objectives for protection of the hydrologic balance set forth in R645-301-731. It will identify the quantity and quality parameters to be monitored, sampling frequency and site locations. It will describe how these data may be used to determine the impacts of the operation upon the hydrologic balance. At a minimum, total dissolved solids or specific conductance corrected to 25 degrees C, pH, total iron, total manganese and water levels will be monitored;

731.212. Ground-water will be monitored and data will be submitted at least every three months for each monitoring location. Monitoring submittals will include analytical results from each sample taken during the approved reporting period. When the analysis of any ground-water sample indicates noncompliance with the permit conditions, then the operator will promptly notify the Division and immediately take the actions provided for in R645-300-145 and R645-301- 731;

731.213. If an applicant can demonstrate by the use of the PHC determination and other available information that a particular water-bearing stratum in the proposed permit and adjacent areas is not one which serves as an aquifer which significantly ensures the hydrologic balance within the cumulative impact area, then monitoring of that stratum may be waived by the Division;

731.214. Ground-water monitoring will proceed through mining and continue during reclamation until bond release. Consistent with the procedures of R645-303-220 through R645-303-228, the Division may modify the monitoring requirements including the parameters covered and the sampling frequency if the operator demonstrates, using the monitoring data obtained under R645-301-731.214 that:

731.214.1. The coal mining and reclamation operation has minimized disturbance to the prevailing hydrologic balance in the permit and adjacent areas and prevented material damage to the hydrologic balance outside the permit area; water quantity and quality are suitable to support approved postmining land uses and the SURFACE COAL MINING AND RECLAMATION ACTIVITY has protected or replaced the water rights of other users; or

731.214.2. Monitoring is no longer necessary to achieve the purposes set forth in the monitoring plan approved under R645-301-731.211.

731.215. Equipment, structures and other devices used in conjunction with monitoring the quality and quantity of ground water on-site and off-site will be properly installed, maintained and operated and will be removed by the operator when no longer needed.

731.220. Surface-Water Monitoring. Surface-water monitoring will be conducted according to the plan approved under R645-301-731.220 and the following:

731.221. The permit application will include a surface-water monitoring plan based upon the PHC determination required under R645-301-728 and the analysis of all baseline hydrologic, geologic and other information in the permit application. The plan will provide for the monitoring of parameters that relate to the suitability of the surface water for current and approved postmining land uses and to the objectives for protection of the hydrologic balance as set forth in R645-301-731 as well as the effluent limitations found in R645-301-751;

731.222. The plan will identify the surface water quantity and quality parameters to be monitored, sampling frequency and site locations. It will describe how these data may be used to determine the impacts of the operation upon the hydrologic balance:

731.222.1. At all monitoring locations in streams, lakes and impoundments, that are potentially impacted or into which water will be discharged and at upstream monitoring locations, the total dissolved solids or specific conductance corrected to 25 degrees C, total suspended solids, pH, total iron, total manganese and flow will be monitored; and

731.222.2. For point-source discharges, monitoring will be conducted in accordance with 40 CFR Parts 122 and 123, R645-301-751 and as required by the Utah Division of Environmental Health for National Pollutant Discharge Elimination System (NPDES) permits;

731.223. Surface-water monitoring data will be submitted at least every three months for each monitoring location. Monitoring submittals will include analytical results from each sample taken during the approved reporting period. When the analysis of any surface water sample indicates noncompliance with the permit conditions, the operator will promptly notify the Division and immediately take the actions provided for in R645-300-145 and R645-301-731. The reporting requirements of this paragraph do not exempt the operator from meeting any National Pollutant Discharge Elimination System (NPDES) reporting requirements;

731.224. Surface-water monitoring will proceed through mining and continue during reclamation until bond release. Consistent with R645-303-220 through R645-303-228, the Division may modify the monitoring requirements, except those required by the Utah Division of Environmental Health, including the parameters covered and sampling frequency if the operator demonstrates, using the monitoring data obtained under R645-301-731.224 that:

731.224.1. The operator has minimized disturbance to the hydrologic balance in the permit and adjacent areas and prevented material damage to the hydrologic balance outside the permit area; water quantity and quality are suitable to support approved postmining land uses and the SURFACE COAL MINING AND RECLAMATION ACTIVITY has protected or replaced the water rights of other users; or

731.224.2. Monitoring is no longer necessary to achieve the purposes set forth in the monitoring plan approved under R645-301-731.221.

731.225. Equipment, structures and other devices used in conjunction with monitoring the quality and quantity of surface water on-site and off-site will be properly installed, maintained and operated and will be removed by the operator when no longer needed.

731.300. Acid- and Toxic-Forming Materials.

731.310. Drainage from acid- and toxic-forming materials and underground development waste into surface water and ground water will be avoided by:

731.311. Identifying and burying and/or treating, when necessary, materials which may adversely affect water quality, or be detrimental to vegetation or to public health and safety if not buried and/or treated; and

731.312. Storing materials in a manner that will protect surface water and ground water by preventing erosion, the formation of polluted runoff and the infiltration of polluted water. Storage will be limited to the period until burial and/or treatment first become feasible, and so long as storage will not result in any risk of water pollution or other environmental damage.

731.320. Storage, burial or treatment practices will be consistent with other material handling and disposal provisions of R645 Rules.

731.400. Transfer of Wells. Before final release of bond, exploratory or monitoring wells will be sealed in a safe and environmentally sound manner in accordance with R645-301-631, R645-301-738, and R645-301-765. With the prior approval of the Division, wells may be transferred to another party for further use. However, at a minimum, the conditions of such transfer will comply with Utah and local laws and the permittee will remain responsible for the proper management of the well until bond release in accordance with R645-301-529, R645-301-551, R645-301-631, R645-301-738, and R645-301-765.

731.500. Discharges.

731.510. Discharges into an underground mine.

731.511. Discharges into an underground mine are prohibited, unless specifically approved by the Division after a demonstration that the discharge will:

731.511.1. Minimize disturbance to the hydrologic balance on the permit area, prevent material damage outside the permit area and otherwise eliminate public hazards resulting from coal mining and reclamation operations;

731.511.2. Not result in a violation of applicable water quality standards or effluent limitations;

731.511.3. Be at a known rate and quality which will meet the effluent limitations of R645-301-751 for pH and total suspended solids, except that the pH and total suspended solids limitations may be exceeded, if approved by the Division; and

731.511.4. Meet with the approval of MSHA.

731.512. Discharges will be limited to the following:

731.512.1. Water;

731.512.2. Coal processing waste;

731.512.3. Fly ash from a coal fired facility;

731.512.4. Sludge from an acid-mine-drainage treatment facility;

731.512.5. Flue-gas desulfurization sludge;

731.512.6. Inert materials used for stabilizing underground mines; and

731.512.7. Underground mine development wastes.

731.513. Water from the underground workings of an UNDERGROUND COAL MINING AND RECLAMATION ACTIVITY may be diverted into other underground workings according to the requirements of R645-301-731.100 through R645-301-731.522 and R645-301-731.800.

731.520. Gravity Discharges from UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES.

731.521. Surface entries and accesses to underground workings will be located and managed to prevent or control gravity discharge of water from the mine. Gravity discharges of water from an underground mine, other than a drift mine subject to R645-301-731.522, may be allowed by the Division if it is demonstrated that the untreated or treated discharge complies with the performance standards of R645-301 and R645-302 and any additional NPDES permit requirements.

731.522. Notwithstanding anything to the contrary in R645-301-731.521, the surface entries and accesses of drift mines first used after January 21, 1981 and located in acid-producing or iron-producing coal seams will be located in such a

manner as to prevent any gravity discharge from the mine.

731.530. State-appropriated water supply. The permittee will promptly replace any State-appropriated water supply that is contaminated, diminished or interrupted by UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES conducted after October 24, 1992, if the affected water supply was in existence before the date the Division received the permit application for the activities causing the loss, contamination or interruption. The baseline hydrologic and geologic information required in R645-301-700. will be used to determine the impact of mining activities upon the water supply.

731.600. Stream Buffer Zones.

731.610. No land within 100 feet of a perennial stream or an intermittent stream or an ephemeral stream that drains a watershed of at least one square mile will be disturbed by coal mining and reclamation operations, unless the Division specifically authorizes coal mining and reclamation operations closer to, or through, such a stream. The Division may authorize such activities only upon finding that:

731.611. Coal mining and reclamation operations will not cause or contribute to the violation of applicable Utah or federal water quality standards and will not adversely affect the water quantity and quality or other environmental resources of the stream; and

731.612. If there will be a temporary or permanent stream channel diversion, it will comply with R645-301-742.300.

731.620. The area not to be disturbed will be designated as a buffer zone, and the operator will mark it as specified in R645-301-521.260.

731.700. Cross Sections and Maps. Each application will contain for the proposed permit area:

731.710. A map showing the locations of water supply intakes for current users of surface water flowing into, out of and within a hydrologic area defined by the Division, and those surface waters which will receive discharges from affected areas in the proposed permit area;

731.720. A map showing the locations of each water diversion, collection, conveyance, treatment, storage and discharge facility to be used. The map will be prepared and certified according to R645-301-512;

731.730. A map showing locations and elevations of each station to be used for water monitoring during coal mining and reclamation operations. The map will be prepared and certified according to R645-301-512;

731.740. A map showing the locations of each existing and proposed sedimentation pond, impoundment and coal processing waste bank, dam or embankment. The map will be prepared and certified according to R645-301-512;

731.750. Cross sections for each existing and proposed sedimentation pond, impoundment and coal processing waste bank, dam or embankment. The cross sections will be prepared and certified according to R645-301-512.200; and

731.760. Other relevant cross sections and maps required by the Division depending on the structures and facilities located in the permit area.

731.800. Water Rights and Replacement. Any person who conducts SURFACE COAL MINING AND RECLAMATION ACTIVITIES will replace the water supply of an owner of interest in real property who obtains all or part of his or her supply of water for domestic, agricultural, industrial, or other legitimate use from an

underground or surface source, where the water supply has been adversely impacted by contamination, diminution, or interruption proximately resulting from the surface mining activities. Baseline hydrologic information required in R645-301-624.100 through R645-301-624.200, R645-301- 625, R645-301-626, R645-301-723 through R645-301-724.300, R645-301-724.500, R645-301-725 through R645-301-731, and R645-301- 731.210 through R645-301-731.223 will be used to determine the extent of the impact of mining upon ground water and surface water.

732. Sediment Control Measures.

732.100. Siltation Structures. Siltation structures will be constructed and maintained to comply with R645-301-742.214. Any siltation structure that impounds water will be constructed and maintained to comply with R645- 301-512.240, R645-301-514.300, R645-301-515.200, R645-301-533.100 through R645-301-533.600, R645-301-733.220 through R645- 301-733.224, and R645-301-743.

732.200. Sedimentation Ponds.

732.210. Sedimentation ponds whether temporary or permanent, will be designed in compliance with the requirements of R645-301-356.300, R645-301-356.400, R645-301-513.200, R645-301-742.200 through R645-301-742.240, and R645- 301-763. Any sedimentation pond or earthen structure which will remain on the proposed permit area as a permanent water impoundment will also be constructed and maintained to comply with the requirements of R645-301-743, R645-301-533.100 through R645-301-533.600, R645-301-512.240, R645-301-514.310 through R645-301-514.321 and R645-301-515.200.

732.220. Each plan will, at a minimum, comply with the MSHA requirements given under R645-301-513.100 and R645-301-513.200.

732.300. Diversions. All diversions will be constructed and maintained to comply with the requirements of R645-301-742.100 and R645-301-742.300.

732.400. Road Drainage. All roads will be constructed, maintained and reconstructed to comply with R645-301-742.400.

732.410. The permit application will contain a description of measures to be taken to obtain Division approval for alteration or relocation of a natural drainageway under R645-301-358, R645-301-512.250, R645-301-527.100, R645-301-527.230, R645-301-534.100, R645-301-534.200, R645-301-534.300, R645-301-542.600, R645-301-742.410, R645-301-742.420, R645-301-752.200, and R645-301-762.

732.420. The permit application will contain a description of measures, other than use of a rock headwall, to be taken to protect the inlet end of a ditch relief culvert, for Division approval under R645-301-358, R645- 301-512.250, R645-301-527.100, R645-301-527.230, R645-301-534.100, R645-301-534.200, R645-301-534.300, R645-301-542.600, R645-301-742.410, R645-301-742.420, R645-301-752.200, and R645-301-762.

733. Impoundments.

733.100. General Plans. Each permit application will contain a general plan and detailed design plans for each proposed water impoundment within the proposed permit area. Each general plan will:

733.110. Be prepared and certified as described under R645-301-512;

733.120. Contain maps and cross sections;

733.130. Contain a narrative that describes the structure;

733.140. Contain the results of a survey as described under R645-301-531;

733.150. Contain preliminary hydrologic and geologic information required to assess the hydrologic impact of the structure; and

733.160. Contain a certification statement which includes a schedule setting forth the dates when any detailed design plans for structures that are not submitted with the general plan will be submitted to the Division. The Division will have approved, in writing, the detailed design plan for a structure before construction of the structure begins.

733.200. Permanent and Temporary Impoundments.

733.210. Permanent and temporary impoundments will be designed to comply with the requirements of R645-301-512.240, R645-301-514.300, R645-301-515.200, R645-301-533.100 through R645-301-533.600, R645-301-733.220 through R645-301-733.226, R645-301-743.240, and R645-301-743. Each plan for an impoundment meeting the size or other criteria of the Mine Safety and Health Administration will comply with the requirements of 30 CFR 77.216-1 and 30 CFR 77.216-2. The plan required to be submitted to the District Manager of MSHA under 30 CFR 77.216 will be submitted to the Division as part of the permit application package. For impoundments not included in R645-301-533.610 the Division may establish through the State program approval process engineering design standards that ensure stability comparable to a 1.3 minimum static safety factor in lieu of engineering tests to establish compliance with the minimum static safety factor of 1.3 specified in R645-301-533.110.

733.220. A permanent impoundment of water may be created, if authorized by the Division in the approved permit based upon the following demonstration:

733.221. The size and configuration of such impoundment will be adequate for its intended purposes;

733.222. The quality of impounded water will be suitable on a permanent basis for its intended use and, after reclamation, will meet applicable Utah and federal water quality standards, and discharges from the impoundment will meet applicable effluent limitations and will not degrade the quality of receiving water below applicable Utah and federal water quality standards;

733.223. The water level will be sufficiently stable and be capable of supporting the intended use;

733.224. Final grading will provide for adequate safety and access for proposed water users;

733.225. The impoundment will not result in the diminution of the quality and quantity of water utilized by adjacent or surrounding landowners for agricultural, industrial, recreational or domestic uses; and

733.226. The impoundment will be suitable for the approved postmining land use.

733.230. The Division may authorize the construction of temporary impoundments as part of coal mining and reclamation operations.

733.240. If any examination or inspection discloses that a potential hazard exists, the person who examined the impoundment will promptly inform the Division

according to R645-301-515.200.

734. Discharge Structures. Discharge structures will be constructed and maintained to comply with R645-301-744.

735. Disposal of Excess Spoil. Areas designated for the disposal of excess spoil and excess spoil structures will be constructed and maintained to comply with R645-301-745.

736. Coal Mine Waste. Areas designated for the disposal of coal mine waste and coal mine waste structures will be constructed and maintained to comply with R645-301-746.

737. Noncoal Mine Waste. Noncoal mine waste will be stored and final disposal of noncoal mine waste will comply with R645-301-747.

738. Temporary Casing and Sealing of Wells. Each well which has been identified in the approved permit application to be used to monitor ground water conditions will comply with R645-301-748 and be temporarily sealed before use and for the purposes of SURFACE COAL MINING AND RECLAMATION ACTIVITIES protected during use by barricades, or fences, or other protective devices approved by the Division. These devices will be periodically inspected and maintained in good operating condition by the operator conducting SURFACE COAL MINING AND RECLAMATION ACTIVITIES.

740. Design Criteria and Plans.

741. General Requirements. Each permit application will include site-specific plans that incorporate minimum design criteria as set forth in R645-301-740 for the control of drainage from disturbed and undisturbed areas.

742. Sediment Control Measures.

742.100. General Requirements.

742.110. Appropriate sediment control measures will be designed, constructed and maintained using the best technology currently available to:

742.111. Prevent, to the extent possible, additional contributions of sediment to stream flow or to runoff outside the permit area;

742.112. Meet the effluent limitations under R645-301-751; and

742.113. Minimize erosion to the extent possible.

742.120. Sediment control measures include practices carried out within and adjacent to the disturbed area. The sedimentation storage capacity of practices in and downstream from the disturbed areas will reflect the degree to which successful mining and reclamation techniques are applied to reduce erosion and control sediment. Sediment control measures consist of the utilization of proper mining and reclamation methods and sediment control practices, singly or in combination. Sediment control methods include, but are not limited to:

742.121. Retaining sediment within disturbed areas;

742.122. Diverting runoff away from disturbed areas;

742.123. Diverting runoff using protected channels or pipes through disturbed areas so as not to cause additional erosion;

742.124. Using straw dikes, riprap, check dams, mulches, vegetative sediment filters, dugout ponds and other measures that reduce overland flow velocities, reduce runoff volumes or trap sediment;

will ensure that leachate and surface runoff do not degrade surface or ground water.

747.300. Final disposal of noncoal mine waste within the permit area will ensure that leachate and drainage does not degrade surface or underground water.

748. Casing and Sealing of Wells. Each water well will be cased, sealed, or otherwise managed, as approved by the Division, to prevent acid or other toxic drainage from entering ground or surface water, to minimize disturbance to the hydrologic balance, and to ensure the safety of people, livestock, fish and wildlife, and machinery in the permit and adjacent area. If a water well is exposed by coal mining and reclamation operations, it will be permanently closed unless otherwise managed in a manner approved by the Division. Use of a drilled hole or borehole or monitoring well as a water well must comply with the provision of R645-301-731.100 through R645-301-731.522 and R645-301-731.800.

750. Performance Standards.

All coal mining and reclamation operations will be conducted to minimize disturbance to the hydrologic balance within the permit and adjacent areas, to prevent material damage to the hydrologic balance outside the permit area and support approved postmining land uses in accordance with the terms and conditions of the approved permit and the performance standards of R645-301 and R645-302. For the purposes of SURFACE COAL MINING AND RECLAMATION ACTIVITIES, operations will be conducted to assure the protection or replacement of water rights in accordance with the terms and conditions of the approved permit and the performance standards of R645-301 and R645-302.

751. Water Quality Standards and Effluent Limitations. Discharges of water from areas disturbed by coal mining and reclamation operations will be made in compliance with all Utah and federal water quality laws and regulations and with effluent limitations for coal mining promulgated by the U.S. Environmental Protection Agency set forth in 40 CFR Part 434.

752. Sediment Control Measures. Sediment control measures must be located, maintained, constructed and reclaimed according to plans and designs given under R645-301-732, R645-301-742 and R645-301-760.

752.100. Siltation structures and diversions will be located, maintained, constructed and reclaimed according to plans and designs given under R645-301-732, R645-301-742 and R645-301-763.

752.200. Road Drainage. Roads will be located, designed, constructed, reconstructed, used, maintained and reclaimed according to R645-301-732.400, R645-301-742.400 and R645-301-762 and to achieve the following:

752.210. Control or prevent erosion, siltation and the air pollution attendant to erosion by vegetating or otherwise stabilizing all exposed surfaces in accordance with current, prudent engineering practices;

752.220. Control or prevent additional contributions of suspended solids to stream flow or runoff outside the permit area;

752.230. Neither cause nor contribute to, directly or indirectly, the violation of effluent standards given under R645-301-751;

752.240. Minimize the diminution to or degradation of the quality or quantity of surface- and ground- water systems; and

752.250. Refrain from significantly altering the normal flow of water in streambeds or drainage channels.

753. Impoundments and Discharge Structures. Impoundments and discharge structures will be located, maintained, constructed and reclaimed to comply with R645-301-733, R645-301-734, R645-301-743, R645-301-745 and R645-301-760.

754. Disposal of Excess Spoil, Coal Mine Waste and Noncoal Mine Waste. Disposal areas for excess spoil, coal mine waste and noncoal mine waste will be located, maintained, constructed and reclaimed to comply with R645-301-735, R645-301-736, R645-301-745, R645-301-746, R645-301-747 and R645-301-760.

755. Casing and Sealing of Wells. All wells will be managed to comply with R645-301-748 and R645-301-765. Water monitoring wells will be managed on a temporary basis according to R645-301-738.

760. Reclamation.

761. General Requirements. Before abandoning a permit area or seeking bond release, the operator will ensure that all temporary structures are removed and reclaimed, and that all permanent sedimentation ponds, diversions, impoundments and treatment facilities meet the requirements of R645-301 and R645-302 for permanent structures, have been maintained properly and meet the requirements of the approved reclamation plan for permanent structures and impoundments. The operator will renovate such structures if necessary to meet the requirements of R645-301 and R645-302 and to conform to the approved reclamation plan.

762. Roads. A road not to be retained for use under an approved postmining land use will be reclaimed immediately after it is no longer needed for coal mining and reclamation operations, including:

762.100. Restoring the natural drainage patterns;

762.200. Reshaping all cut and fill slopes to be compatible with the postmining land use and to complement the drainage pattern of the surrounding terrain.

763. Siltation Structures.

763.100. Siltation structures will be maintained until removal is authorized by the Division and the disturbed area has been stabilized and revegetated. In no case will the structure be removed sooner than two years after the last augmented seeding.

763.200. When the siltation structure is removed, the land on which the siltation structure was located will be regraded and revegetated in accordance with the reclamation plan and R645-301-358, R645-301-356, and R645-301-357. Sedimentation ponds approved by the Division for retention as permanent impoundments may be exempted from this requirement.

764. Structure Removal. The application will include the timetable and plans to remove each structure, if appropriate.

765. Permanent Casing and Sealing of Wells. When no longer needed for monitoring or other use approved by the Division upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well under R645-301-731.100 through R645-301-731.522 and R645-301-731.800, each well will be capped, sealed, backfilled, or otherwise properly managed, as required by the Division in accordance with R645-301-529.400, R645-301-551, R645-301-631.100, and R645-301-748. Permanent closure measures will be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters.

will equal or exceed the thickness of the original surface soil layer, as determined by the soil survey.

317.600. Revegetation and Restoration of Soil Productivity.

317.610. Following prime farmland soil replacement, the soil surface will be stabilized with a vegetative cover or other means that effectively controls soil loss by wind and water erosion.

317.620. Prime farmland soil productivity will be restored in accordance with the following provisions:

317.621. Measurement of soil productivity will be initiated within 10 years after completion of soil replacement;

317.622. Soil productivity will be measured on a representative sample or on all of the mined and reclaimed prime farmland area using the reference crop determined under R645-302-317.626. A statistically valid sampling technique at a 90-percent or greater statistical confidence level will be used as approved by the Division in consultation with the NRCS;

317.623. The measurement period for determining average annual crop production (yield) will be a minimum of three crop years prior to release of the operator's performance bond;

317.624. The level of management applied during the measurement period will be the same as the level of management used on nonmined prime farmland in the surrounding area;

317.625. Restoration of soil productivity will be considered achieved when the average yield during the measurement period equals or exceeds the average yield of the reference crop established for the same period for nonmined soils of the same or similar texture or slope phase of the soil series in the surrounding area under equivalent management practices;

317.626. The reference crop on which restoration of soil productivity is proven will be selected from the crops most commonly produced on the surrounding prime farmland. Where row crops are the dominant crops grown on prime farmland in the area, the row crop requiring the greatest rooting depth will be chosen as one of the reference crops;

317.627. Reference crop yields for a given crop season are to be determined from:

317.627.1. The current yield records of representative local farms in the surrounding area, with concurrence by the NRCS; or

317.627.2. The average county yields recognized by the U.S. Department of Agriculture, which have been adjusted by the NRCS for local yield variation within the county that is associated with differences between nonmined prime farmland soil and all other soils that produce the reference crop; and

317.628. Under either procedure in R645-302-317.627, the average reference crop yield may be adjusted, with the concurrence of the NRCS, for:

317.628.1. Disease, pest, and weather-induced seasonal variations; or

317.628.2. Differences in specific management practices where the overall management practices of the crops being compared are equivalent.

320. Alluvial Valley Floors. R645-302-320 applies to any person who conducts or intends to conduct coal mining and reclamation operations on areas or adjacent to areas designated as alluvial valley floors.

321. Alluvial Valley Floor Determination.

321.100. Before applying for a permit to conduct, or before conducting surface coal mining and reclamation operations within a valley holding a stream or in a location where the adjacent area includes any stream, the applicant shall either affirmatively demonstrate, based on available data, the presence of an alluvial valley floor, or submit to the Division the results of a field investigation of the proposed permit and adjacent area. The field investigations shall include sufficiently detailed geologic, hydrologic, land use, soils, and vegetation studies on areas required to be investigated by the Division, after consultation with the applicant, to enable the Division to make an evaluation regarding the existence of the probable alluvial valley floor in the proposed permit or adjacent area and to determine which areas, if any, require more detailed study in order to allow the Division to make a final determination regarding the existence of an alluvial valley floor.

321.200. Studies performed during the investigation by the applicant or subsequent studies as required of the applicant by the Division shall include an appropriate combination, adapted to site-specific conditions, of:

321.210. Mapping of unconsolidated stream-laid deposits holding streams including, but not limited to, geologic maps of unconsolidated deposits, and stream-laid deposits, maps of streams, delineation of surface watersheds and directions of shallow groundwater flows through and into the unconsolidated deposits, topography showing local and regional terrace levels, and topography of terraces, flood plains and channels showing surface drainage patterns;

321.220. Mapping of all lands included in the area in accordance with R645-302-321 and subject to agricultural activities, showing the area in which different types of agricultural lands, such as flood irrigated lands, pasture lands and undeveloped rangelands, exist, and accompanied by measurements of vegetation in terms of productivity and type;

321.230. Mapping of all lands that are currently or were historically flood irrigated, showing the location of each diversion structure, ditch, dam and related reservoir, irrigated land, and topography of those lands;

321.240. Documentation that areas identified in R645-302-321 are, or are not, subirrigated, based on groundwater monitoring data, representative water quality, soil moisture measurements, and measurements of rooting depth, soil mottling, and water requirements of vegetation;

321.250. Documentation, based on representative sampling, that areas identified under R645-302-321 are, or are not, flood irrigable, based on streamflow, water quality, water yield, soils measurements, and topographic characteristics; and

321.260. Analysis of a series of aerial photographs, including color infrared imagery flown at a time of year to show any late summer and fall differences between upland and valley floor vegetative growth and of a scale adequate for reconnaissance identification of areas that may be alluvial valley floors.

321.300. Based on the investigations conducted under R645-302-321.200, the Division will make a determination of the extent of any alluvial valley floors within the study area and whether any stream in the study area may be excluded from further consideration as lying within an alluvial valley floor. The Division will determine that an alluvial valley floor exists if it finds that:

321.310. Unconsolidated streamlaid deposits holding streams are present; and,

321.320. There is sufficient water to support agricultural activities as evidenced by:

321.321. The existence of flood irrigation in the area in question or its historical use;

321.322. The capability of an area to be flood irrigated, based on streamflow water yield, soils, water quality, and topography; or,

321.323. Subirrigation of the lands in question, derived from the groundwater system of the valley floor.

322. Application Contents for Operations Affecting Designated Alluvial Valley Floors.

322.100. If land within the permit area or adjacent area is identified as an alluvial valley floor and the proposed coal mining and reclamation operation may affect an alluvial valley floor or waters supplied to an alluvial valley floor, the applicant will submit a complete application for the proposed coal mining and reclamation operation to be used by the Division together with other relevant information, including the information required by R645-302-321, as a basis for approval or denial of the permit.

322.200. The complete application will include detailed surveys and baseline data required by the Division for a determination of:

322.210. The characteristics of the alluvial valley floor which are necessary to preserve the essential hydrologic functions throughout the mining and reclamation process;

322.220. The significance of the area to be affected to agricultural activities;

322.230. Whether the operation will cause, or presents an unacceptable risk of causing, material damage to the quantity or quality of surface or groundwaters that supply the alluvial valley floor;

322.240. The effectiveness of proposed reclamation with respect to requirements of the State Program; and

322.250. Specific environmental monitoring required to measure compliance with R645-302-324 during and after coal mining and reclamation operations.

322.300. Information required under R645-302-322 shall include, but not be limited to:

322.310. Geologic data, including geologic structure, and surficial geologic maps, and geologic cross-sections;

322.320. Soils and vegetation data, including a detailed soil survey and chemical and physical analysis of soils, a vegetation map and narrative descriptions of quantitative and qualitative surveys, and land use data, including an evaluation of crop yields;

322.330. Surveys and data required under R645-302-322 for areas designated as alluvial valley floors because of their flood irrigation characteristics will also include, at a minimum, surface hydrologic data, including streamflow, runoff, sediment yield, and water quality analysis describing seasonal variations over at least one full year, field geomorphic surveys and other geomorphic studies;

322.340. Surveys and data required under R645-302-322 for areas designated as alluvial valley floors because of their subirrigation characteristics, will also include, at a minimum, geohydrologic data including observation well establishment for purposes of water level measurements, groundwater contour maps, testing to determine aquifer characteristics that affect waters supplying the alluvial valley

floors, well and spring inventories, and water quality analysis describing seasonal variations over at least one full year, and physical and chemical analysis of overburden to determine the effect of the proposed coal mining and reclamation operations on water quality and quantity;

322.350. Plans showing how the operations will avoid, during mining and reclamation, interruption, discontinuance or preclusion of farming on the alluvial valley floors unless the premining land use has been undeveloped rangeland which is not significant to farming and will not materially damage the quantity or quality of water in surface and groundwater systems that supply alluvial valley floors;

322.360. Maps showing farms that could be affected by the mining and, if any farm includes an alluvial valley floor, statements of the type and quantity of agricultural activity performed on the alluvial valley floor and its relationship to the farm's total agricultural activity including an economic analysis; and

322.370. Such other data as the Division may require.

322.400. The surveys required by R645-302-322 should identify those geologic, hydrologic, and biologic characteristics of the alluvial valley floor necessary to support the essential hydrologic functions of an alluvial valley floor. Characteristics which support the essential hydrologic functions and which must be evaluated in a complete application include, but are not limited to:

322.410. Characteristics supporting the function of collecting water which include, but are not limited to;

322.411. The amount and rate of runoff and water balance analysis, with respect to rainfall, evapotranspiration, infiltration and groundwater recharge;

322.412. The relief, slope, and density of the network of drainage channels;

322.413. The infiltration, permeability, porosity and transmissivity of unconsolidated deposits of the valley floor that either constitute the aquifer associated with the stream or lie between the aquifer and the stream; and

322.414. Other factors that affect the interchange of water between surface streams and groundwater systems, including the depth to groundwater, the direction of groundwater flow, the extent to which the stream and associated alluvial groundwater aquifers provide recharge to, or are recharged by bedrock aquifers;

322.420. Characteristics supporting the function of storing water which include, but are not limited to:

322.421. Roughness, slope, and vegetation of the channel, flood plain, and low terraces that retard the flow of surface waters;

322.422. Porosity, permeability, waterholding capacity, saturated thickness and volume of aquifers associated with streams, including alluvial aquifers, perched aquifers, and other water bearing zones found beneath valley floors; and

322.423. Moisture held in soils or the plant growth medium within the alluvial valley floor, and the physical and chemical properties of the subsoil that provide for sustained vegetation growth or cover during extended periods of low precipitation;

322.430. Characteristics supporting the function of regulating the flow of water which include, but are not limited to:

322.431. The geometry and physical character of the valley, expressed in terms of the longitudinal profile and slope of the valley and the channel, the sinuosity of the channel, the cross-section, slopes and proportions of the channels, flood plains and

low terraces, the nature and stability of the stream banks and the vegetation established in the channels and along the stream banks and flood plains;

322.432. The nature of surface flows as shown by the frequency and duration of flows of representative magnitude including low flows and floods; and

322.433. The nature of interchange of water between streams, their associated alluvial aquifers and any bedrock aquifers as shown by the rate and amount of water supplied by the stream to associated alluvial and bedrock aquifers (i.e. recharge) and by the rates and amounts of water supplied by aquifers to the stream (i.e., baseflow); and

322.500. Characteristics which make water available and which include, but are not limited to the presence of land forms including flood plains and terraces suitable for agricultural activities.

323. Findings

323.100. No permit or permit change application for coal mining and reclamation operations in Utah will be approved by the Division unless the application demonstrates and the Division finds in writing, on the basis of information set forth in the application that:

323.110. The proposed operations would not interrupt, discontinue, or preclude farming on an alluvial valley floor unless the premining land use has been undeveloped rangeland which is not significant to farming on the alluvial valley floor, or unless the area of an affected alluvial valley floor is small and provides, or may provide, negligible support for production of one or more farms; provided however, R645-302-323.100 does not apply to those lands which were identified in a reclamation plan approved by the State Program prior to August 3, 1977, for any coal mining and reclamation operation that, in the year preceding August 3, 1977;

323.111. Produced coal in commercial quantities and was located within or adjacent to alluvial valley floors, or

323.112. Obtained specific permit approval by the Division to conduct coal mining and reclamation operations within an alluvial valley floor;

323.120. The proposed operations would not materially damage the quantity and quality of water in surface and underground water systems that supply those alluvial valley floors or portions of alluvial valley floors which are:

323.121. Included in R645-302-323.110; or

323.122. Outside the permit area of an existing or proposed coal mining and reclamation operation;

323.130. The proposed operations would be conducted in accordance with all applicable requirements of the State Program; and

323.140. Any change in the land use of the lands covered by the proposed permit area from its premining use in or adjacent to alluvial valley floors will not interfere with or preclude the reestablishment of the essential hydrologic functions of the alluvial valley floor.

323.200. The significance of the impact of the proposed operations on farming will be based on the relative importance of the vegetation and water of the developed grazed or hayed alluvial valley floor area to the farm's production, or any more stringent criteria established by the Division as suitable for site-specific protection of agricultural activities in alluvial valley floors. The effect of the proposed operations on farming will be concluded to be significant if they would

remove from production, over the life of the mine, a proportion of the farm's production that would decrease the expected annual income from agricultural activities normally conducted at the farm.

323.300. Criteria for determining whether a coal mining and reclamation operation will materially damage the quantity or quality of waters subject to R645-302-323.310 and R645-302-323.320 include, but are not limited to:

323.310. Potential increases in the concentration of total dissolved solids of waters supplied to an alluvial valley floor, as measured by specific conductance in millimhos, to levels above the threshold value at which crop yields decrease, as specified in Maas and Hoffman, "Crop Salt Tolerance - Current Assessment," Table 1, "Salt Tolerance of Agricultural Crops," which is incorporated by reference unless the applicant demonstrates compliance with R645-302- 323.320.

323.311. Salt tolerances for agricultural crops have been published by E.V. Maas and G.J. Hoffman, in a paper titled "Crop Salt Tolerance - Current Assessment" contained in The Journal of The Irrigation and Drainage Division, American Society of Civil Engineers, pages 115 through 134, June, 1977. Table 1, giving threshold salinity values is presented on pages 22 through 125.

323.312. The Maas and Hoffman publication is on file and available for inspection and copying at the Division office;

323.320. Potential increases in the concentration of total dissolved solids of waters supplied to an alluvial valley floor in excess of those incorporated by reference in R645-302-323.310 will not be allowed unless the applicant demonstrates, through testing related to the production of crops grown in the locality, that the proposed operations will not cause increases that will result in crop yield decreases;

323.321. For types of vegetation not listed in Maas and Hoffman as specified by the Division, based upon consideration of observed correlation between total dissolved solid concentrations in water and crop yield declines, taking into account the accuracy of the correlations;

323.322. Potential increases in the average depth to water saturated zones (during the growing season) located within the root zone of the alluvial valley floor that would reduce the amount of subirrigation land compared to premining conditions;

323.323. Potential decreases in surface flows that would reduce the amount of irrigable land compared to premining conditions; and

323.324. Potential changes in the surface or groundwater systems that reduce the area available to agriculture as a result of flooding or increased saturation of the root zone.

323.400. For the purposes of R645-302-323, a farm is one or more land units on which agricultural activities are conducted. A farm is generally considered to be the combination of land units with acreage and boundaries in existence prior to August 3, 1977, or, if established after August 3, 1977, with those boundaries based on enhancement of the farm's agricultural productivity and not related to coal mining and reclamation operations.

324. Performance Standards.

324.100. Essential Hydrologic Functions.

324.110. The operator of a coal mining and reclamation operation will minimize disturbances to the hydrologic balance by preserving throughout the mining and

reclamation process the essential hydrologic functions of an alluvial valley floor not within the permit area.

324.120. The operator of a coal mining and reclamation operation will minimize disturbances to the hydrologic balance within the permit area by reestablishing throughout the mining and reclamation process the essential hydrologic functions of alluvial valley floors.

324.200. Protection of Agricultural Activities.

324.210. Prohibitions. Coal mining and reclamation operations will not:

324.211. Interrupt, discontinue or preclude farming on alluvial valley floors; or

324.212. Cause material damage to the quantity or quality of water in surface or underground water systems that supply alluvial valley floors.

324.220. Statutory Exclusions. The prohibitions of R645-302-324.210 will not apply:

324.221. Where the premining land use of an alluvial valley floor is undeveloped rangeland which is not significant to farming;

324.222. Where farming on the alluvial valley floor that would be affected by the coal mining and reclamation operation is of such small acreage as to be of negligible impact on the farm's agricultural production;

324.223. To any coal mining and reclamation operation that, in the year preceding August 3, 1977:

324.223.1. Produced coal in commercial quantities and was located within or adjacent to a alluvial valley floor; or

324.223.2. Obtained specific permit approval by the Division to conduct coal mining and reclamation operations within an alluvial valley floor; or

324.224. To any land that is the subject of an application for renewal or revision of a permit issued pursuant to the Act which is an extension of the original permit, insofar as:

324.224.1. The land was previously identified in a reclamation plan submitted under R645-301, and

324.224.2. The original permit area was excluded from the protection of R645-302-324.210 for a reason set forth in R645-302-324.223.

324.300. Monitoring.

324.310. A monitoring system will be installed, maintained, and operated by the permittee on all alluvial valley floors during coal mining and reclamation operations and continued until all bonds are released in accordance with R645-301-800. The monitoring system will provide sufficient information to allow the Division to determine that:

324.311. The essential hydrologic functions of alluvial valley floors are being preserved outside the permit area or reestablished within the permit area throughout the mining and reclamation process in accordance with R645-302-324.100;

324.312. Farming on lands protected under R645-302-324.200 is not being interrupted, discontinued, or precluded; and

324.313. The operation is not causing material damage to the quantity or quality

of water in the surface or underground systems that supply alluvial valley floors protected under R645-302-324.200.

324.320. Monitoring will be conducted at adequate frequencies to indicate long-term trends that could affect compliance with R645-302-324.100 and R645-302-324.200.

324.330. All monitoring data collected and analyses thereof will routinely be made available to the Division.

KEY

reclamation, coal mines

Date of Enactment or Last Substantive Amendment

October 1, 1999

Notice of Continuation

March 7, 2007

Authorizing, Implemented, or Interpreted Law

40-10-1 et seq.

Rule converted into HTML by the Division of Administrative Rules.

For questions regarding the *content* or *application* of rules under Title R645, please contact the promulgating agency (Natural Resources; Oil, Gas and Mining; Coal). A list of agencies with links to their homepages is available at <http://www.utah.gov/government/agencylist.html> or from <http://www.rules.utah.gov/contact/agencycontacts.htm>.

For questions about the *rulemaking process*, please [contact](#) the Division of Administrative Rules. *Please Note:* The Division of Administrative Rules is **not able** to answer questions about the content or application of these rules.

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