

**United States Department of Agriculture**



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October 16, 2006

**NATIONAL ENGINEERING MANUAL  
 210-V  
 AMENDMENT NUMBER 43  
 SUBJECT: ENG - NEW MEXICO AMENDMENTS**

**Purpose:**

The purpose of this amendment is to distribute New Mexico amendments to portions of the National Engineering Manual.

**Effective Date:**

These amendments are effective upon receipt.

**Filing Instructions:**

Note that the new pages are to be inserted at the end of the applicable part and are to be printed on green paper.

<u>Remove Pages / Old Sections / Previous Amendments</u>	<u>Insert Pages / New Sections</u>
NM500-1(1)	NM500.02-1
§NM500.02 - Abbreviations	§NM500.02 - Abbreviations
Part of NM Amendment 26 dated January 1986	
NM501.04-1	Revision to NM501.04-1
§NM501.04 - Engineering job approval authority	§NM501.04 - Engineering job approval authority
Part of NM Amendment 42 dated March 2006	
NM501-22(1) to NM501-22(4)	NM501.62-1 to NM501.62-5
§NM501.65 - State Conservationist Responsibilities	§NM501.62 - Responsibilities in New Mexico
Part of NM Amendment 2 dated July 1980	
NM501-33(1) to NM501-33(4) NM501-33(14) to NM501-33(16)	No pages to insert
§NM501.73-80 - Exhibits A, B and C §NM501.73-80 - Exhibit E	No new section to insert
NM Amendment 16 dated October 1982 NM Amendment 24 dated February 1985 Part of NM Amendment 34 dated March 1992	

Transmittal Page 2 of New Mexico Amendment 43 to the National Engineering Manual

<u>Remove Pages / Old Sections / Previous Amendments</u>	<u>Insert Pages / New Sections</u>
NM-503-1	NM503.00-1
§NM503.02 - General considerations	§NM503.00 - General §NM503.02 - General considerations §NM503.04 - Buried utilities
Part of NM Amendment 2 dated July 1980	
No pages to remove	NM506.03-1
No section to remove	§NM506.03 - Metrification
<hr/>	
NM510-1	No pages to insert
§NM510.01 - Preliminary studies	No new section to insert
Part of NM Amendment 2 dated July 1980	
NM510-2(1)	No pages to insert
§NM510.02 - Documentation	No new section to insert
Part of NM Amendment 29 dated June 1988	
NM511-5(1) to NM511-5(8)	NM511.04-1
§NM511.04 - Design Analysis and the exhibit entitled "The Illustrative Problem"	§NM511.04 - Design analysis
Part of NM Amendment 5 dated March 1981	
NM511-8, 8a, 8b NM511-14 to NM511-23	NM511.10-1
§NM511.11 NM511.11(b) - Exhibits A, B and C	§NM511.10 - Scope §NM511.11 - Design folders
Part of NM Amendment 1 dated February 1980	
NM511-15(1)	NM511.24-1
§NM511.24 - Instrumentation plans	§NM511.24 - Instrumentation plans §NM511.25 - Instrumentation monitoring and reporting
Part of NM Amendment 28 dated May 1988	
NM512-5	NM512.21-1
§NM512.21 - Evaluation procedures	§NM512.21 - Evaluation procedures
Part of NM Amendment 2 dated July 1980	
The following may or may not be filed in the NEM: <ul style="list-style-type: none"> <li>▪ Prequalified Drip Irrigation Tubing March 1983</li> <li>▪ NM Bulletin No. 210-1-2 dated 9/24/1991</li> <li>▪ SCS-West Consolidated Lists of Prequalified Materials and Mark Materials dated August 1991</li> </ul>	No pages to insert

Transmittal Page 3 of New Mexico Amendment 43 to the National Engineering Manual

<u>Remove Pages / Old Sections / Previous Amendments</u>	<u>Insert Pages / New Sections</u>
NM512-9	NM512.32-1
§NM512.32 - Inspection procedures	§NM512.32 - Quality assurance procedures
Part of NM Amendment 2 dated July 1980	
NM512-12	No pages to insert
§NM512.34-80 - Construction quantities	No new section to insert
NM Amendment 13 dated May 1982	
NM512-13(1), NM512-13(2), & NM512-13(a)	NM512.41-1 to NM512.41-4
§NM512.41 - Records	§NM512.41 - Records
NM Amendment 19	
Part of NM Amendment 27 dated June 1986	
NM513-80(1)	No pages to insert
§NM513.00-80 - General	No new section to insert
Part of NM Amendment 25	Since §513 is reserved, there cannot be any amendments. However, see the National Operation & Maintenance Manual (180-V-NOMM) for policy.
NM520-12b(1)	NM520.27-1
§NM520.27 - Emergency action plans	§NM520.27 - Emergency action plans -- class (c)
§NM520.25 - Potential impact area	
Part of NM Amendment 25 dated January 1986	
NM530-1 to NM530.5 (note no page NM530-4)	NM530-1 to NM530-9
§NM530.03(b)(3) - Report on unusual storm or flood discharge	§NM530.00 - General
§NM530.11 - Hydrologic procedures	§NM530.01 - Available hydrologic information
	§NM530.02 - Hydrometeorological instrumentation
	§NM530.03 - Hydrologic reports in general
	§NM530.04 - Hydrologic reports for unusual storm or flood discharge
	§NM530.10 - General
	§NM530.11 - Hydrologic procedures
	§NM530.12 - Hydrologic criteria
Part of NM Amendment 2 dated July 1980	
NM Amendment 18 dated August 1983	
NM534-1	No pages to insert
§NM534.00-80 - Sediment allocation in floodwater detention dams	No new section to insert
NM Amendment 9 Dated March 1982	§534 is reserved and the topic is currently presented in §531 - Geology

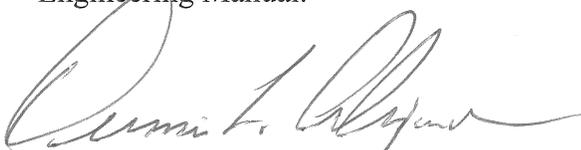
Transmittal Page 4 of New Mexico Amendment 43 to the National Engineering Manual

<u>Remove Pages / Old Sections / Previous Amendments</u>	<u>Insert Pages / New Sections</u>
NM536-4	NM536.09-1
§NM536.09 - State standard detail drawings	§NM536.09 - State standard detail drawings
Part of NM Amendment 2 Dated July 1980	
NM537-1	No pages to insert
§NM537.01(c) - SCS technical assistance for environmental engineering	No new section to insert
Part of NM Amendment 7 dated September 1981	
NM540-1(1) to NM540-1(3) [green sheets] NM540-1(1) to NM540-1(14) [blue sheets]	NM540-1 to NM540-11
§NM540.01 - Major projects §NM540.02 - Minor Projects §NM540.10-80 - Exhibits	§NM540.00 to §NM540.13
Part of NM Amendment 2 Dated July 1980	
NM540-1(4)	<i>See pages listed above.</i>
§NM540.03 - Format	<i>See sections listed above.</i>
Part of NM Amendment 25 dated January 1986	
No pages to remove	NM541.0-1
No section to remove	§NM541.0 - General §NM541.2 - Sheet Size
NM542-1(1)	NM542.01-1
§NM542.01 - Scope	§NM542.01 - Scope
Part of NM Amendment 27 dated June 1986	
Primary Table of Contents [White Pages i and ii] (just before red tab entitled GENERAL)	No pages to insert
Part of National Amendment 23 dated September 1997	
Table of Contents [Green Page NMi(1)]	Primary Table of Contents [Pages i and ii]
Part of NM Amendment 25 dated January 1986	
Table of Contents for Subchapter A [White Pages iii to vii] (just after red tab entitled GENERAL)	No pages to insert
Part of National Amendment 23 dated September 1997	
Table of Contents for Subchapter A [Green Pages NMvi(1) and NMvi(2)]	Table of Contents for Subchapter A - General [Pages i to v]
Part of NM Amendment 25 dated January 1986	
Table of Contents for Subchapter B [White Pages i and ii] (just after red tab entitled MANAGEMENT)	No pages to insert
Part of National Amendment 24 dated December 1997	

Transmittal Page 5 of New Mexico Amendment 43 to the National Engineering Manual

Remove Pages / Old Sections / Previous Amendments	Insert Pages / New Sections
Table of Contents for Subchapter B [Green Pages NMii(1) and NMii(2)] Part of NM Amendment 25 dated January 1986	Table of Contents for Subchapter B - Management [Pages i to iii]
Table of Contents for Subchapter C [White Pages i and ii] (just after red tab entitled APPLICATIONS) Part of National Amendment 23 dated September 1997	No pages to insert
Table of Contents for Subchapter C [Green Page NMii(1)] Part of NM Amendment 25 dated January 1986	Table of Contents for Subchapter C - Applications [Pages i and ii]
Remove Pages / Old Sections / Previous Amendments	Insert Pages / New Sections
Table of Contents for Subchapter D [White Pages i to iv] (just after red tab entitled TECHNOLOGY) Part of National Amendment 23 dated September 1997 and Part of National Amendment 24 dated December 1997	No pages to insert
Table of Contents for Subchapter D [Green Pages NMiv(1) and NMiv(2)] Part of NM Amendment 25 dated January 1986	Table of Contents for Subchapter D - Technology [Pages i to iv]
Table of Contents for Subchapter E [White Pages i and ii] (just after red tab entitled SUPPORT) Part of National Amendment 24 dated December 1997	No pages to insert
Table of Contents for Subchapter E [Green Page NMii(1)] Part of NM Amendment 25 dated January 1986	Table of Contents for Subchapter E - Support Operations [Pages i to ii]
Old Tabulation(s) of New Mexico Amendments to the National Engineering Manual	October 2006 Tabulation of New Mexico Amendments to the National Engineering Manual

Receipt of this transmittal should be posted to the New Mexico tabulation sheet of the National Engineering Manual.



DENNIS L. ALEXANDER  
State Conservationist

Enclosures

Distribution: All Field Offices  
All Engineers



## PART 500 - INTRODUCTION

### SUBPART A – GENERAL

NM500.02

#### §NM500.02 Abbreviations

While an attempt was made not to use abbreviations, the following abbreviations may have been used in the New Mexico amendments to the National Engineering Manual:

AC	Area Conservationist
AE	Area Engineer
CNMP	Comprehensive Nutrient Management Plan
CO	Contracting Officer
COR	Contracting Officer Representative
COTR	Contracting Officer Technical Representative
DC	District Conservationist
DE	Design Engineer
GM	General Manual
GWQB	Ground Water Quality Bureau (NMED)
IFB	Invitation for Bids
INSP	Inspector
NMED	New Mexico Environment Department
NMOSE	New Mexico Office of the State Engineer
O&M	Operation and Maintenance
PCE	Project Construction Engineer
PCO	Project Construction Office
PL	Public Law
SAO	State Administrative Officer
SCE	State Conservation Engineer
SCS	Soil Conservation Service; now known as Natural Resource Conservation Service
SDE	State Design Engineer
SLO	Sponsoring Local Organization
STC	State Conservationist
SWCD	Soil and Water Conservation District
SWQB	Surface Water Quality Bureau (NMED)
ac-ft	acre-feet
cfs	cubic feet per second
fps	feet per second
ft	foot or feet
ft <sup>2</sup>	square feet
ft <sup>3</sup>	cubic feet
gpm	gallons per minute
in	inch
mi	miles
mi <sup>2</sup>	square miles
psi	pounds per square inch
s	second
sq	square

NM500.02-1



PART 501 - AUTHORIZATIONS  
SUBPART A – REVIEW AND APPROVAL

§NM501.04 Engineering job approval authority

- (a) The State Conservation Engineer has retained the job approval authority to approve designs for all agricultural waste projects, and the designs for dams, ponds, and dikes associated with agricultural waste projects for all job classes identified in NM-ENG-2. The following practices are involved:

Conservation Practice	Code
<b>AGRICULTURAL WASTE</b>	
Anaerobic Digester, Ambient Temperature	365
Anaerobic Digester, Controlled Temperature	366
Animal Mortality Facility	316
Closure of Waste Impoundments	360
Pond Sealing or Lining - Flexible Membrane	521A
Manure Transfer	634
Monitoring Well	353
Waste Facility Cover	367
Waste Storage Facility	313
Waste Treatment Lagoon	359
Waste Water Treatment Strip	635
<b>DAMS, STRUCTURES &amp; EARTHEN EMBANKMENTS</b>	
Dam	402
Dike	356
Pond	378

In addition, all designs performed by non-NRCS persons, except for those prepared by licensed engineers registered under the Technical Service Provider program, for which NRCS has technical or financial responsibility, will be reviewed and approved by the State Conservation Engineer.

- (b) In-state engineering job approval authority (Classes I through V)
- (1) In general, the following is applicable for all low hazard projects:
- (i) Class I and Class II jobs include most of the engineering work involved in assisting farmers, ranchers, and landowners with smaller conservation practices.



PART 501 - AUTHORIZATIONS  
SUBPART F – SNOW SURVEYS AND WATER SUPPLY FORECASTING

NM501.62(a)(7)

§NM501.62 Responsibilities in New Mexico

(a) Administration

- (1) The conduct of the snow survey and water supply forecasting program is a part of the assigned duties of all line officers and others where this activity is applicable to their operations. Line officers are to provide leadership and responsibility for the snow survey and water supply forecasting program within their areas as may be assigned.
- (2) The Snow Survey Supervisor for Arizona, Colorado, New Mexico and the southern part of Wyoming is headquartered in Denver, Colorado, and considered to be part of the New Mexico State Office when snow survey and water supply forecasting activities are being performed.
- (3) The Snow Survey Supervisor for this area is responsible to the New Mexico State Conservationist for the snow survey activities within the state.
- (4) The Snow Survey Supervisor for this area is responsible for the establishment and maintenance of a snow course and soil moisture station network to meet the water supply forecast needs of the state of New Mexico. It is also incumbent upon the Snow Survey Supervisor to ensure the collection and processing of an acceptable quality of measurements and data from all measuring stations.
- (5) Stream flow forecasts, water supply outlook, appropriate reports, and publications are to be prepared by Snow Survey Supervisor for release by the State Conservationist.
- (6) Technical guidance is to be provided by the Water and Climate Center.
- (7) Since the Snow Survey Supervisor for this area is headquartered at Denver, technical responsibility for coordination and performing certain details in the snow survey program has been assigned to the State Soil Scientist. Responsibilities of the State Soil Scientist include coordinating and directing the routine phases of the snow survey and water supply forecasting program with other activities carried out in New Mexico. In carrying out these responsibilities, the intent is to provide assistance to the Snow Survey Supervisor in keeping the snow survey program coordinated with the activities of NRCS and provide support to line officers in carrying out their responsibilities.

NM501.62-1

## PART 501 - AUTHORIZATIONS

### SUBPART F – SNOW SURVEYS AND WATER SUPPLY FORECASTING

#### NM501.62(a)(8)

- (8) The installation of snow courses, soil moisture stations, air markers, or other data-collecting devices will be done under the direct supervision of the Snow Survey Supervisor. The Snow Survey Supervisor will overview the inspection and maintenance of snow courses and other installations during the off-season periods. The foregoing will be accomplished in cooperation with local line officers.
- (9) Schedules for measurements of snow courses and soil moisture stations will be prepared by the Snow Survey Supervisor in consultation with line officers involved with the snow survey program as well as with the several cooperating and water-using organizations.
- (10) Form NRCS-ENG-708A is to be used to record measurements of snow courses, soil moisture stations, and precipitation gauge readings. Agricultural Handbook Number 169 (Snow Survey Sampling Guide) is a reference guide designed for snow surveyors and a copy is available on the New Mexico web site.

#### (b) Cooperation

Snow activities in New Mexico are closely related and integrated into a cooperative program with state, federal, and private agencies. These cooperative arrangements and agreements will be made by the State Conservationist.

#### (c) Forecasts

- (1) Forecasts are used in water management planning for irrigation, reservoir regulation, power, flood control, and municipal purposes. Forecasts are prepared in terms of volume and peak flows depending on available data and the need of the water users.
- (2) Forecasts for seasonal flow of streams in terms of acre-feet or other volumetric measurements will be prepared by the Snow Survey Supervisor.
- (3) Special forecasts, such as high flow in years of above-normal snow conditions, will be provided for the benefit of landowners in predominantly agricultural valleys subject to flood damage.

#### (d) Publications

- (1) A formal snow report will be prepared by the Snow Survey Supervisor reflecting snow conditions on the various courses on or about the 1<sup>st</sup> day of each month beginning in January and ending in May. Reports are to be issued no later than the 10<sup>th</sup> day of the respective month.

## PART 501 - AUTHORIZATIONS

### SUBPART F – SNOW SURVEYS AND WATER SUPPLY FORECASTING

NM501.62(e)(4)

- (2) Special snow reports of less formal nature will be published at other times as the need arises.
- (3) Title pages of all reports will reflect credit to the major cooperating agencies.
- (4) Reports will include present and comparative data on snow measurements, reservoir storage, and soil moisture condition. For March 1 and later dates, numerical water-supply forecasts for major streams will be presented, along with past records of stream flow. The report will also contain narrative descriptions of water supply outlook as of the date of the report. Cooperating agencies are to be consulted to the maximum extent possible when preparing the report.
- (5) Snow reports will be sent to any organization or individual requesting the material. The direct mail list will be maintained by the State Soil Scientist. Additions or deletions to the list will be made as the State Soil Scientist is informed of the necessary changes by NRCS personnel, district cooperators, or others. Field personnel are requested to advise soil conservation district cooperators in irrigated areas that the reports are available upon request.

#### (e) New Releases

- (1) The State Water Supply Specialist will prepare statewide news releases for dissemination by the State Conservationist. News releases will be coordinated with other agencies when directed by the State Conservationist.
- (2) General information on the snow survey program of statewide interest will be prepared under the direction of the Snow Survey Supervisor.
- (3) Area Conservationists and District Conservationists are encouraged to issue timely local news releases reflecting current and significant historical snow survey data. To avoid the possibility of being misquoted through telephone or personal interview, news releases should be submitted in writing. No raw snow measurement data will be made available to the public until the raw data has been checked for accuracy by the Snow Survey Supervisor.
- (4) When the formal “Water Supply Outlook” or other publications having statewide distribution do not provide adequate local coverage, supplemental news stories should be prepared to amplify local conditions and to provide additional interest to the affected water users. The Public Affairs Specialist will provide such releases to the Albuquerque news media. Where snow survey assistance or information is provided by other agencies or organizations, a joint news release should be considered. To be meaningful, data on snow measurements should be released as soon as possible after the measurements are made.

NM501.62-3

## PART 501 - AUTHORIZATIONS

### SUBPART F – SNOW SURVEYS AND WATER SUPPLY FORECASTING

NM501.62(f)

#### (f) Equipment

- (1) The State Soil Scientist has line responsibility for the operation and maintenance of all machines and equipment assigned to the snow survey and water supply forecasting program. Vehicles designed to be operated over snow, trucks, and other snow survey equipment will be assigned to a specific member of the snow survey team for active responsibility for operation and maintenance.
- (2) The State Soil Scientist is the accountable property officer for vehicles designed to be operated over snow and special equipment assigned to NRCS personnel in New Mexico.
- (3) Measuring equipment, skis, ski poles, snowshoes, varnish, waxes, goggles, and other essential items for over-snow travel will be furnished by the Snow Survey Supervisor as required.
- (4) Authorized personal clothing will be supplied to personnel making snow surveys. See Title 360 - General Manual, Part 420 - Safety and Health Management Program, Subpart K - Field Policy for Snow Survey, Snow Pack Telemetry (SNOTEL), Soil Climate Analysis Network (SCAN) for more information.
- (5) Protective headgear will be worn while operating or riding on over-snow equipment that does not have an enclosed cab.
- (6) Equipment issued for snow surveys shall not be used for other than official purposes. The Snow Survey Supervisor will coordinate requisitions, determine requirements, and distribute the above-mentioned and special equipment. Requisitions for the procurement of snow survey equipment and supplies not furnished by the Snow Survey Supervisor will be prepared and justified by the State Soil Scientist. Individuals will be required to perform routine maintenance on snowshoes, skis, and other equipment in their possession.

#### (g) Physical Examinations

- (1) Physical examinations from private or public facilities are required and are available at government expense to all NRCS employees assigned to make snow surveys. See §420.101 (Physical Fitness for Duty) of Subpart K of Part 420 (Safety and Health Management Program) of Title 360 - General Manual. Electrocardiograms will be authorized by the State Conservationist for all employees if the physical examination should indicate the need.
- (2) Physical examinations will be taken annually, not later than December 1.

NM501.62-4

(210-V-NEM, NM Amendment 43, October 2006

PART 501 - AUTHORIZATIONS

SUBPART F – SNOW SURVEYS AND WATER SUPPLY FORECASTING

NM501.62(h)

- (3) Standard Form No. 78 (United States Civil Service Commission - Certificate of Medical Examination) shall be completed during the examination and filed at the State Office.

(h) Training

In addition to the training identified in §420.102 (West-Wide Snow Survey Training) of Subpart K of Part 420 (Safety and Health Management Program) of Title 360 - General Manual, training of individuals will be conducted through written instructions, personal conferences and demonstrations, area training meetings, and through special area, state, and regional snow survey training schools.



PART 503 - SAFETY

SUBPART A – ENGINEERING ACTIVITIES AFFECTING UTILITIES

NM503.04(a)

§NM503.00 General

The Natural Resources Conservation Service (NRCS) shall apply to all references of the Soil Conservation Service (SCS).

§NM503.02 General considerations

- (e) This establishes Service policy in New Mexico for locating and preventing damage to public and private utilities and also for protecting equipment, operators and other personnel during their investigations or construction operations related to NRCS programs. Public and private utilities include, but are not limited to telephone lines, electrical lines, cable television lines, natural gas lines, and petroleum lines, either above or below ground.
  - (1) The District Conservationist (DC) shall be aware of all activities relating to public utilities in his/her field office. The DC shall develop and maintain a record of the names, addresses and phone numbers of responsible officials of all utility companies having facilities within the DC's area(s) of responsibility. The utility's responsible official is defined as one who can provide the necessary protection to avoid disruption or damage to the utility during the investigation or construction operation.
  - (2) Form NRCS-ENG-006, "Utility Checklist", is to be maintained by the responsible NRCS employee who records action taken pertaining to work in the vicinity of utilities. This form is to be maintained in the NRCS job file.

§NM503.04 Buried utilities

- (a) The company/operator that will actually perform investigations for the land owner or sponsoring organization, or the contractor for construction operation shall utilize the free services provided by New Mexico One Call Systems, Inc., by calling the company at least 48 hours before excavation. The statewide telephone number for the company is 1-800-321-2537 and the web site is: <http://www.nmonecall.org/>.

NM503.00-1



PART 506 - TECHNICAL MATERIALS

NM506.03(c)

§NM506.03 Metrification

- (c) During the transition period stated in §506.03(a), new engineering documents may be prepared in common inch-pound units without showing metric units.



PART 511 - DESIGN  
SUBPART A – PROCEDURES

NM511.04(d)(3)(ii)

§NM511.04 Design analysis

- (c) Clear and concise computational work shall document all designs. The following guidelines have been developed to be used in making computations for conservation practices where approved data sheets are not complete or not used.
- (1) In order to prepare clear and concise computation work:
    - (i) Record the analysis in a series of single and logical steps.
    - (ii) If NRCS Computation Sheets are not used, format each sheet to identify the headings identified on the NRCS Computation Sheets - state, project, by, date, checked by, date, job number, and subject.
    - (iii) Ensure that the work is neat, legible, and complete.
    - (iv) Use symbols, codes, standards, and abbreviations that are generally accepted by the industry or provide a listing defining symbols and abbreviations used.
  - (2) Divide complex or involved problems into short steps and if at all possible, relatively simple steps. The solution to every problem should follow a clear, well defined trail from the original data to the final answer. A complete set of computations should answer the following questions clearly:
    - (i) What is being sought? This should be answered in a complete statement of words, not in the symbolic shorthand of the engineer.
    - (ii) What data was used? List all raw data used. Convert data from one unit to another as required as part of the computational work.
    - (iii) How was the result obtained? Answer this by as many entries and minor calculations as may be necessary to enable a checker to verify both the reasoning and the arithmetic. Do not use short cuts or combine involved operations.
  - (3) Format computation sheets as followed:
    - (i) Complete all blanks in the heading area.
    - (ii) Divide the sheet into two columns. The left column should be relatively narrow and should be reserved to identify references used. Diagrams, sketches, and computations should be in the significantly wider right column.

NM511.04-1



PART 511 - DESIGN  
SUBPART B – DOCUMENTATION

NM511.11(b)(19)

§NM511.10 Scope

Design reports are to be prepared for all designs, regardless of approval categories, that involve agricultural waste projects and dams, structures and earthen embankments identified in §NM501.04(a). In addition, design reports are to be prepared for all other designs, regardless of approval category, that require co-approval of the State Conservation Engineer.

Design reports to be concurred with or approved by the State Conservation Engineer are to be submitted to the State Conservation Engineer as an attachment to Form NM-ENG-252. All data supporting the design shall accompany the request. A completed and signed Comprehensive Nutrient Management Plan shall be part of the design documentation for agricultural waste projects.

Designs prepared by non-NRCS personnel for all designs to be concurred with or approved by the State Conservation Engineer shall be documented in the same manner as required in §511.11. Contracts or engineering services agreements are to be written to require the preparation of a design report outlined in §511.11.

§NM511.11 Design folders

(b) Design reports for dam designs are to be submitted by the State Conservation Engineer to the Chief of the Dam Safety Bureau, Office of the State Engineer. The design report is to address Section 19.25.12.11 and Section 19.25.12.12 of the New Mexico Administrative Code and as currently listed in the “Rules and Regulations Governing Dam Design, Construction and Dam Safety” published by the Office of the State Engineer.

(b)(19) - Authority

Design reports that are to be submitted to the Chief of the Dam Safety Bureau, Office of the State Engineer, are to be certified in accordance with the requirements of the state as listed in the “Rules and Regulations Governing Dam Design, Construction and Dam Safety” published by the Office of the State Engineer.

NM511.10-1



PART 511 - DESIGN  
SUBPART C – INSTRUMENTATION

NM511.25(b)

§NM511.24 Instrumentation plans

The design engineer shall be responsible for the development of instrumentation plans. The instrumentation plan shall be documented as a separate topic in the design engineer's report.

§NM511.25 Instrumentation monitoring and reporting

- (a) The Area Conservationist (AC) shall be responsible to provide assistance to ensure all required monitoring is performed, recorded, and reported to the State Conservation Engineer (SCE) in accordance with the established instrumentation monitoring plan.
- (b) The SCE shall be responsible for preparing the annual report and submitting a copy of the report to the Chief of the Conservation Engineering Division.



PART 512 - CONSTRUCTION  
SUBPART C – EVALUATION OF CONSTRUCTION MATERIALS

NM512.21(b)(4)

§NM512.21 Evaluation procedures

- (b) The following guidelines shall be used to determine if used materials may be used in installing conservation practices in New Mexico:
- (1) Used tires will not be permitted as a component of any structure constructed under any conservation practice standard other than Conservation Practice Standard 614 - Watering Facility.
  - (2) Used materials may be used if the used materials will perform as satisfactorily as new materials.
  - (3) The designer with the appropriate job class approval shall certify in writing that the used material meets the requirements of §512.21(b).
  - (4) The proposed used materials for job class V and above designs must be accepted in writing by the State Conservation Engineer prior to the installation of used materials.



PART 512 - CONSTRUCTION  
SUBPART D – QUALITY ASSURANCE ACTIVITIES

NM512.32(c)

§NM512.32 Quality assurance procedures

- (b) To ensure that engineering conservation practices with Engineering Job Approval Class I to IV are properly installed, the District Conservationist and the Area Engineer shall review the available inspection resources and the District Conservationist shall assign a responsible technician for each engineering conservation practice. If a qualified technician is not within the District Conservationist's area, the Area Conservationist shall be consulted. The assigned technician shall be responsible for the inspection and documentation of the assigned engineering conservation practice.
  
- (c) A quality assurance plan for Conservation Practice Standard 521A, Pond Sealing or Lining - Flexible Membrane, is not required for Engineering Job Class I through V projects. A quality assurance plan for Conservation Practice Standard 521A, Pond Sealing or Lining - Flexible Membrane, is required for Engineering Job Class VI projects or higher.



PART 512 - CONSTRUCTION  
SUBPART D – QUALITY ASSURANCE ACTIVITIES

NM512.41(a)(7)

§NM512.41 Records

- (a) §517 of Subpart B - Maintaining Contract Records of the National Contracts, Grants, and Cooperative Agreement Manual (NCGAM) was last updated in 1991 in the New Mexico State Office and cannot be located on the web. The following includes the guidance of §517.10, §517.11, §517.12 and §517.13 of the NCGAM.

The use of Form NRCS-ENG-310 (Job Diary) is required for all Class V or larger community ditch or formal contract projects. The appointed government representative and the construction inspector shall each maintain a job diary on NRCS-administered contracts. On large projects, it may be necessary to maintain a job diary for each phase of the work, such as concrete, earthwork, roller compacted concrete, loose rock riprap, *et cetera*.

- (1) The job diary should provide a complete history of the work by listing in chronological orders events having a bearing of performance of the work and the causes of those events.
- (2) For work to be accomplished by contract, the job diary should be used to record the showing of the site to prospective bidders. Record names, positions, and firms represented, giving date and time that the site was inspected. List questions that were asked and answers given. Describe weather, site, and soil conditions at the time of the showing.
- (3) Keep at least one job diary for each contract.
- (4) The job diary shall be accessible at all times, preferably carried on the person, so an entry can be made as soon as an event occurs. Read and understand the instructions in the front of the NRCS-ENG-310.
- (5) Use a ball point pen, fine tip marker, or hard lead pencil to make entries. If an incorrect entry is made, cross it out (do not erase) and sign the cross out.
- (6) Follow each entry in the narrative portion of the report with the signature of the person making the entry and line off each entry from the other entries. If it is necessary to continue to another page, use one of the ruled pages in the back of the book. Cross reference the pages and date and sign the entry on each page.
- (7) Prepare reports for non-workdays (such as holidays, Saturdays, Sundays, or periods during which work is suspended) if events occur that might affect the performance of the contract.

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PART 512 - CONSTRUCTION  
SUBPART D – QUALITY ASSURANCE ACTIVITIES

NM512.41(a)(8)

- (8) Narrative entries are to include the following events or items of importance:
- i. Instructions received from supervisors.
  - ii. Instructions given to contractor. Under certain circumstances, it may be desirable to request the contractor to initial the entry relating to the instructions.
  - iii. Contacts made with the contractor's forces.
  - iv. Contacts made with the sponsor(s).
  - v. Discussions with the contractor's forces.
  - vi. Discussions with the sponsor(s).
  - vii. Change of supervisory personnel.
  - viii. Notation of stakes placed and measurements made.
  - ix. Units of work accomplished.
  - x. Units of equipment operating.
  - xi. Progress of work.
  - xii. List of any tests performed and the results of the testing.
  - xiii. Reasons for lost time or delays.
  - xiv. Times of arrival and departure.
  - xv. Any development that might result in having to determine the necessity for a contract modification.
  - xvi. Agreements and disagreements with the contractor. In recording the contractor's comments, use direct quotes to reflect the contractor's attitude.
  - xvii. Detailed record of problems encountered by the contractor, particularly if it appears that a differing site condition may exist.
  - xviii. Record of efficiency or inefficiency of the contractor's operations.
  - xix. Detailed record of rejection of work, materials or material certifications.
  - xx. Detailed record of extra work performed by the contractor, including work due to engineering errors.
  - xxi. Identify visitors to the work site by name and briefly state reasons for the visit and date/time of visit.

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(210-V-NEM, NM Amendment 43, October 2006)

PART 512 - CONSTRUCTION  
SUBPART D – QUALITY ASSURANCE ACTIVITIES

NM512.41(c)(3)

- (9) When the SAO, CO, SCE or their representatives are on the job site, they shall record the following in the official job diary:
  - i. Purpose of visit, time of arrival and time of departure.
  - ii. Decisions made.
  - iii. Instructions given to the government representative(s).
- (10) When the SDE or the Geologist visits the site, the findings and recommendations are to be prepared as a trip report addressed to the State Conservation Engineer. The visit is to be recorded by the government inspector in the job diary.
- (11) Job diaries are long-range official records and should be handled as provided in the General Manual Records Guide.

Form NRCS-CPA-6 (Conservation Assistance Notes) shall be used to document construction for minor structures (Class I through IV or Class V agricultural waste projects). An entry should be made for each job site visit. The entry should note the purpose of the visit, any instructions given or received, progress of work, any difficulties encountered, *et cetera*. The last line should be signed by the person completing the dated entry.

(b) *There is no New Mexico amendment to this section.*

(c) Construction documentation shall include the following:

- (1) *There is no New Mexico amendment to this section.*
- (2) *There is no New Mexico amendment to this section.*
- (3) Photographic documentation of significant construction activities shall include: site conditions that may affect contractor performance, deficiencies, safety and health conditions, water quality protection systems and its effectiveness, less than efficient operations, weather conditions, *et cetera*. Each digital picture, 35 mm film positive (slide) and film negative (print) is to be properly identified with the following minimum data: project name, subject of the picture, contractor, contract number, date, and photographer's name. For digital pictures, the properties of the file are to include all of the required information. File names such as P1010013.jpg are not acceptable.

For Project Construction Offices, the Project Engineer shall designate the person or persons for taking the necessary construction photographs. The designated photographer(s) are to maintain a log of all photographs taken. This log may be maintained in the back of the job diary or in a separate bound book. If a separate

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PART 512 - CONSTRUCTION  
SUBPART D – QUALITY ASSURANCE ACTIVITIES

NM512.41(c)(3)

bound book is maintained, the job diary is to contain a reference as to where the log is maintained. The log is to contain the time, date, location of subject, the name of the photographer, a descriptive caption which identifies the purpose of the photograph, and identifies the photograph with a number. If the photograph is in digital format, the electronic file name is to be part of the log.

During the construction operation, the photographs are to be assembled and indexed to show a clear and complete documentation of construction progress. The photograph file should document the site before construction, significant phases of construction, any unusual or problem conditions, and the as-built structure. At the completion of the contract, the photograph documentation file is to be transmitted to the State Conservation Engineer for permanent filing.

- (4) *There is no New Mexico amendment to this section.*
  - (5) *There is no New Mexico amendment to this section.*
  - (6) Photographs should be taken to document good work, work progress, unusual conditions, unsatisfactory operations, violation of safety regulations, results of accidents, or other items of interest. An entry is to be made in the job diary when pictures are taken of unusual conditions or unsatisfactory operations. A complete photographic coverage of the work site and structures shall be made when a default action has been taken against the contractor.
- (d) Form NRCS-CPA-6 shall be used to document the extent of testing and record keeping to support quality installation of Engineering Job Class I through V conservation practices.

PART 520 - SOIL AND WATER RESOURCE DEVELOPMENT  
SUBPART C – DAMS

NM520.27(a)

§NM520.27 Emergency action plans -- class (c) dams

(a) Applicability

The following shall apply to high hazard (class c) and significant hazard (class b) dams.

The emergency action plan is to prepared in accordance with the requirements of Section 19.25.12.12 and Section 19.25.12.18 of the New Mexico Administrative Code and currently listed in the “Rules and Regulations Governing Dam Design, Construction and Dam Safety” published by the Office of the State Engineer. NRCS participation is limited to providing a template to be followed (if requested by the sponsors) and providing the technical aspects of the dam. Examples of the technical aspects include, but are not necessarily limited to, the project description, emergency detection, evaluation and classification and the inundation map. The balance of the plan is to be completed by the sponsors with assistance provided by the New Mexico Department of Public Safety-Office of Emergency Management and the local County Office of Emergency Management. Inundation maps are to be prepared by the State Hydraulic Engineer.

The completed and signed emergency action plan is to be approved by the Chief of the Dam Safety Bureau prior to the issuance of an invitation for bids for installation or rehabilitation of a dam.

NM520.27-1



PART 530 - HYDROLOGY  
SUBPART A - HYDROLOGIC INVESTIGATIONS

NM530.02(a)

§NM530.00 General.

Hydrologic investigations and analyses are essential for determining the location, quantity, timing, and availability of water resources in the planning and design of water related structures and projects, and for the project evaluation. Hydrologic investigations and analyses rely on available hydrologic data such as volumes and rates of stream flow, meteorological data such as precipitation rates and amounts, and watershed characteristics. If hydrometeorological data are inadequate, the installation of instruments for the collection of data may be necessary. Instrumentation may also be required for reservoir operation to make effective use of available storage to meet project objectives.

§NM530.01 Available hydrologic information.

To the extent possible, available hydrologic information is to be used for planning, design, and operation of water-related structures and systems. Data on stream flow are available from the US Geological Survey (USGS) through the National Water Information System (NWIS) at <http://waterdata.usgs.gov/nwis/sw/>. Precipitation and related climatological data are available from the National Water and Climate Center (NWCC) of NRCS, the National Climatic and Data Center (NCDC), the National Oceanic and Atmospheric Administration (NOAA), and technical papers and reports of the National Weather Service (NWS). Other sources of hydrologic information include Agricultural Research Service (ARS); Forest Service (FS); and federal, state and local agencies having planning and/or operational responsibilities for water-related projects.

Hydrometeorological data may be found in various reports about the watershed, river basin or floodplain. These reports should be in the libraries of the various federal agencies involved in report preparation. FEMA maps are available at: <http://msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&catalogId=10001&langId=-1>. The user will have to specify the type of product desired when the web page is opened. This includes: Public Flood map, DFIRM database, Digital flood data, and Flood map status (single or yearly issue). By entering location information for the desired locality, which includes street address, city, state, and ZIP code, and then clicking the "Product Search" button, the relevant floodplain information will be displayed.

§NM530.02 Hydrometeorological instrumentation.

- (a) Definition. Hydrometeorological instruments include, but are not limited to, water stage recorders; devices for measuring snow depth and snow-water content; and instruments for collecting data on precipitation, soil moisture, maximum and minimum temperatures, wind direction and speed, relative humidity, evaporation, and solar radiation.

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PART 530 - HYDROLOGY  
SUBPART A - HYDROLOGIC INVESTIGATIONS

NM530.02(b)

- (b) Determining need. Hydrometeorological instrumentation is required for project planning if data are inadequate for making reliable estimates for project development. This requirement is particularly important for projects that include storage for irrigation or other beneficial use and for which accurate estimates of available water supply are essential to the project's performance and justification. Statistical analyses are normally based on the number of samples first and then the time frame. It also depends on the type of data required and its significance in the overall computation procedure.
- (c) Planning for hydrometeorological instrumentation.
- (1) A plan for collecting needed hydrologic data is to be developed at the earliest possible date, consistent with project planning or project operation objectives. This plan is to include a statement of justification for the instrumentation; the type of instruments required including numbers, kind, and proposed location; a schedule for installation; and anticipated operation and maintenance costs.
- (i) For planning and formulation. If additional hydrometeorological data are required for planning, instruments are to be installed as soon as practical after planning begins. Hydrometeorological instruments installed for planning may be temporary or permanent depending on their probable future usefulness.
- (ii) For operation. If hydrometeorological data are required for operation, planning for hydrometeorological instrumentation is to proceed concurrently with other planning activities. The project plan is to include a justification for the instrumentation and describe the required instruments, including numbers, kind, and location; a schedule for installation; and anticipated operation and maintenance costs. For operation and to ensure that the maximum length of record is available, hydrometeorological instruments are to be installed as soon as possible after the plan is approved.
- (iii) For both planning and operation. Hydrometeorological instruments selected for planning purposes should be as inexpensive as possible to keep planning costs to a minimum. If hydrometeorological instruments will be useful for both planning and operation, select a site that permits future installation of more sophisticated equipment and/or additional instruments at a later date, if needed.
- (iv) Post project approval. Projects authorized for construction that did not include needed hydrometeorological instruments in the initial plan should be supplemented to include the needed instruments. The plan supplement should include items and details outlined in preceding paragraph (ii).

PART 530 - HYDROLOGY  
SUBPART A - HYDROLOGIC INVESTIGATIONS

NM530.02(g)

- (2) In developing proposals that include hydrometeorological instrumentation, the guidelines established in Office of Management & Budget (OMB) Memorandum M-92-1, "Coordination of Water Resources Information," and Circular A-62, "Policies and Procedures for the Coordination of Federal Meteorological Services," are to be followed to avoid duplication of effort and to ensure efficiency of the data collection system. Instrumentation may be required for planning, operation, or both.
- (d) Installing hydrometeorological instruments. For planning, hydrometeorological instruments are to be installed as soon as possible after planning is authorized to ensure that the maximum length of record is available.
- (e) Operating and maintaining hydrometeorological instruments.
- (1) Cost of operating and maintaining hydrometeorological stations used to operate the project reservoirs or other project measures are the responsibility of the sponsors. Funds are not to be used for sharing of operating and maintenance costs. Funds may be used for instruments and for analysis of data needed for planning and designing a reservoir. These funds should be included as part of the engineering services cost of the structure. Snow survey or other appropriate federal funds may be used.
- (2) If requested, and if the sponsors reimburse NRCS for the costs, NRCS can help operate and maintain hydrometeorological instruments including the collection and analysis of data. NRCS may share in operation and maintenance costs if installed hydrometeorological stations provide data used outside the project area and NRCS has responsibility to provide data.
- (f) Inspection and follow up. Significant items to consider in inspection and follow up include evidence that: hydrometeorological instruments are maintained in good working order so that reliable data are obtained; data are collected and used in a timely manner according to the operating needs of the project; forecast procedures are updated and accuracy improved as additional data are collected; and reservoir gates and other project features are operated so as to regulate the storage or release of water for project purposes in accordance with the operation and maintenance agreement.
- (g) Funding hydrometeorological instruments. Costs of installing instruments required for project development are planning costs and should be charged to that activity. Approval to spend planning funds for hydrometeorological instruments shall be commensurate with the required type of monitoring. Influencing factors include cost and length of time monitoring will be required. If long-term monitoring is required, the likelihood of long-term funding should be considered. Requests for approval should include a description of the required instruments including numbers, kind, and location, a schedule for installation, and a statement of justification.

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PART 530 - HYDROLOGY  
SUBPART A - HYDROLOGIC INVESTIGATIONS

NM530.03

§NM530.03 Hydrologic reports in general.

(a) Hydrologic reports provide:

- (1) A record of investigations performed and documentation of field data collection methods. The report should include a brief description of the hydrologic method used and why that method was used. In addition, the report should include a final summary of the study and conclusions reached
- (2) Factors considered in selection of project alternatives.
- (3) Information for future studies.
- (4) A record of how a structure or system of structures operates under design conditions.

(b) Reports may include, but are not limited to, the following:

- (1) Research and improvement of existing hydrologic techniques.
- (2) Investigation of water supply for a water storage site.
- (3) Effects of alternative systems of floodwater retarding structures on downstream discharges.
- (4) Report on unusual storm or flood discharge.
- (5) Report on field study of emergency spillway performance.
- (6) Reservoir Operation Plans.
- (7) Floodplain Management and Flood Insurance Reports.
- (8) Dam breach and inundation studies for emergency action plans (EAP).
- (9) Water budget analysis for wetland restoration, enhancement, and construction.

(c) Review and Approval of Reports

The preparation, review, and approval of these reports and investigations must be consistent with the job approval authority.

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(210-V-NEM, NM Amendment 43, October 2006)

PART 530 - HYDROLOGY  
SUBPART A - HYDROLOGIC INVESTIGATIONS

NM530.04(a)(4)

§NM530.04 Hydrologic reports for unusual storm or flood discharge.

This section outlines NRCS policy and procedure in New Mexico for collecting and reporting data pertaining to flood events. It is particularly important that flood reports be made for projects in planning stage, under construction, or installed under the small watershed program (PL83-566) or under the resource conservation and development (RC&D) program.

(a) Policy

- (1) It is the policy in NRCS in New Mexico to collect flood damage and precipitation data.
- (2) The District Conservationist in each field office shall take immediate action to gather precipitation and flood data on every flood flow causing significant damage. The District Conservationist is responsible for the preparation and submission of the flood report. The report shall be prepared on Form NM-ENG-97 entitled "Report of Flood Event" and submitted to the State Conservation Engineer.

When the District Conservationist determines that the necessary personnel or equipment to obtain the data is not available, the Area Conservationist is to be notified.

Other federal, state or local agencies may be interested in storm and flood events and may have personnel in the area. Coordinated action is advisable when possible. If other agencies are investigating the event, such activity should be noted in the report.

- (3) The Area Engineer assigned responsibility for the appropriate field office shall review the report prepared by the District Conservationist and check procedures and calculations before the report is submitted to the State Conservation Engineer.
- (4) The Area Conservationist is to ensure that the necessary action is carried-out by the District Conservationist. When the District Conservationist does not have the resources necessary to collect the required data, the Area Conservationist is to arrange for technical assistance and/or equipment. In instances where storms of extreme magnitude occur with disastrous flooding or wide areas are flooded, the Area Conservationist shall immediately notify the State Conservationist by telephone.

In instances where storms of extreme magnitude occur with disastrous flooding or wide areas are flooded, the Area Conservationist shall assign personnel to assist in evaluating damages, rainfall, and flood flow in the area. If a storm of extreme

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SUBPART A - HYDROLOGIC INVESTIGATIONS

NM530.04(a)(4)

magnitude covers multiple field offices, the Area Conservationist shall assign one person leadership for compiling reports.

- (5) The State Conservationist will designate the Area Conservationist to have leadership in compiling reports when storms of extreme magnitude involve multiple field offices located in more than one administrative area.

(b) Procedure

A watershed map is to be developed showing areal extent of the storm, surveyed cross sections, highwater marks and hydraulic characteristics of the channel, area inundated, rainfall amounts at different locations, and any other information which may be helpful in determining storm frequency and damage.

To obtain storm intensity, duration, and amount of rainfall, people living in the area should be interviewed and any measurements and comments recorded. Precipitation data is to be obtained as soon after the storm as possible. This is especially true for "bucket surveys." When a "bucket survey" is made (measurement of water in cans, tubs, *et cetera*), the type, size and shape of the container should be recorded along with the measurement. Any recorded measurements or estimates of volume should be located on a map so isohyetal lines can be developed.

Field data collected is to include, but not be limited to, cross sections and profiles to be located on a map, general alignment of the channel (straight, crooked, smooth curve, *et cetera*), type of vegetation in the channel and floodplain, estimate of Manning's "n" value, type of soil or surface, *et cetera*. High watermarks are helpful in completing hydraulic analyses of channels and floodplains. Surveys are to be performed to the extent necessary to complete a hydraulic model of the area.

Descriptions of flood damages in physical terms shall be made. Newspaper articles, photographs, statements of individuals (use names and locations), and other accounts of the flood should be used to prepare an estimate the damages. Local histories, such as estimates of the recurrence period (yearly, every ten years or so, rarely, *et cetera*) is also helpful.

The following type of information is of utmost importance and should be obtained whenever possible:

(1) General

- (i) Delineate the drainage pattern through the area flooded. Show total area flooded. All cross sections taken to relate peak flows must be located on a map. Locate rainfall measurements or gauging stations. Record total drainage area contributing to the runoff.

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(210-V-NEM, NM Amendment 43, October 2006

PART 530 - HYDROLOGY  
SUBPART A - HYDROLOGIC INVESTIGATIONS

NM530.04(b)(3)(i)[3]

- (ii) Report the location of all specific high water levels. If absent, locate and identify high water marks in the most severely damaged areas. Aerial photographs and/or other photographs of the damage area are extremely helpful in determining flood damages.
- (2) Agricultural
- (i) Locate on an overlay of an aerial photograph or other base the area of cropland flooded. Provide a general estimate of acres flooded 0 to 1 foot in depth, 1 to 3 feet in depth, and 3 feet or deeper.
  - (ii) Prepare a general statement as to the present use of the flooded agricultural land, such as percent of cotton, orchards, row crops, alfalfa, pasture, *et cetera*.
  - (iii) Indicate locations of any damages to irrigation systems caused directly by flooding and/or sediment accumulation.
  - (iv) Indicate length of time any irrigation water may have been interrupted and location of interruption.
  - (v) Indicate in a general manner the degree of damage to farm lands, fences, and other damages.
  - (vi) Show locations of any major areas of sediment deposits on agricultural lands.
- (3) Non-Agricultural
- (i) Urban
    - [1] Locate on an overlay of an aerial photograph or other base the area of the urban areas flooded. Provide a general estimate of acres flooded 0 to 1 foot in depth, 1 to 2 feet in depth, and 2 feet or deeper.
    - [2] Within the area of depth, estimate the number of homes flooded and the duration of flooding. State approximately, if possible, the percent of homes versus building materials (adobe, brick, clapboard, *et cetera*).
    - [3] Within each area of flooding depth, estimate the number of businesses and schools flooded. With a minimum of spot-checking, estimate their total damage incurred. Also, indicate an estimate of any damages to any specific manufacturing firms.

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PART 530 - HYDROLOGY  
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NM530.04(b)(3)(ii)

(ii) Public Utilities

Indicate any total overall damages to any public utilities, such as electricity, natural gas, telephone, cable, sanitary sewer, and/or water. Indicate any length of interruption of such services and where breaks occurred.

(iii) Public Infrastructure

Provide, if possible, an overall estimate of damages to roads, streets, bridges, railroads, culverts, hydraulic structures *et cetera*. As a minimum, indicate the main damage identified (washouts, sediment deposits, et cetera) and whether any overtopping of hydraulic structures.

PART 530 - HYDROLOGY  
SUBPART B - HYDROLOGIC PROCEDURES AND CRITERIA

NM530.12

§NM530.10 General.

Hydrologic procedures have been developed within NRCS to assist in the planning and design of on-farm conservation practices, including water control structures, and to solve hydrologic problems encountered in developing plans and designs for project activities. Because structure or project costs may range from several hundred to several million dollars, it is important that the most suitable hydrologic procedure be used for a particular problem. The procedure selected must provide the desired level of accuracy and complement other design procedures to ensure that the structure or project meets its functional objective. Hydrologic criteria for designing conservation practices and water control structures have been developed largely from field experience and represent minimum acceptable standards consistent with the objectives of the practice or structure.

§NM530.11 Hydrologic procedures.

- (a) Procedures in Chapter 2 (as revised for New Mexico) of the Engineering Field Handbook, (EFH), is to be used for hydrologic determinations on conservation practices where drainage areas are less than ten (10) square miles.
- (b) Procedures in Part 630 of the National Engineering Handbook and designated references are to be used for hydrologic analysis of soil and water conservation practices for all hydrologic determinations on drainage areas of ten (10) square miles or larger. These hydrologic procedures include Urban Hydrology for Small Watersheds (TR-55) and Computer Program for Project Formulation - Hydrologic Investigations (TR-20).
- (c) Procedures outside the scope of the National Engineering Handbook, Section 4, Hydrology, (NEH-4) and other designated references may be used if prior approval has been obtained from the approving engineer. The watershed hydrology for a structure is to be reviewed and approved as part of the design file for a structure according to job class and job approval authority as set forth in §501.04 and as may be amended by §NM501.04. Hydrologic procedures are to be approved by the one having job approval authority for the job before final design of the structure is made.

§NM530.12 Hydrologic criteria.

Hydrologic criteria established in standards and directives are to be used for designing conservation practices and water control structures. Exceptions to use of national criteria are to be obtained from the Director of the Conservation Engineering Division. Requests for such action are to include the recommendations of the approving engineer.

All engineers and technicians shall be trained in the use of NRCS hydrologic procedures needed for the planning, design, and installations of conservation measures.

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PART 536 - STRUCTURAL ENGINEERING  
SUBPART D – TECHNOLOGY

NM536.09(e)

§NM536.09 State standard detail drawings

- (c) Approved New Mexico Engineering Standard Drawings are to be used whenever site conditions and design requirements permit. Approved standard drawings are posted within the New Mexico home page (<http://www.nm.nrcs.usda.gov/>).
- (e) Structures planned and constructed in conformance with a standard drawing and the specifications thereon, are approved for installation providing the individual planning the installation has job approval authority covering the type and size of structure planned or secures necessary design approval by an individual holding the necessary job approval authority.



PART 540 - FIELD SURVEYS  
SUBPART E – SUPPORT OPERATIONS

NM540.01(c)(1)

§NM540.00 General

Concise, accurate, and legible engineering notes are necessary to document planning, design, and construction. They support expenditure of Federal and other funds for conservation installations. Technical Release No. 62, “Engineering Layout, Notes, Staking and Calculations,” and Engineering Field Handbook, Chapter 1, “Engineering Surveys” provide the recommended format for engineering notes and related staking.

Though the intent of the initial survey may be planning surveys, every effort is to be made to perform complete surveys to reduce the need to re-survey the area for completing a design.

When equipment has been used within a quarantined or noxious weed area, all equipment and vehicles shall be thoroughly washed prior to leaving the site if at all possible. If that is not possible, all equipment and vehicles shall be pressure washed prior to entering any other site. This is to remove all mud, dirt and potential seeds from the equipment and reduce the spread of noxious weeds and soil contaminants.

§NM540.01 Format

Note keeping must be of comparable quality and similar content to the sample format in Technical Release No. 62. When using electronic data collection systems, data shall be exported to Microsoft Excel, ASCII, or plain text to record the survey data and hardcopy documentation of the recorded data provided to the planner/designer.

(a) If local coordinate systems are to be used, significant different values shall be used at the initial coordinate. Avoid 10,000 N and 10,000 E or 5,000 N and 5,000 E. Use systems such as 100,000 N and 200,000 E.

(b) Point files shall be electronically filed in a comma-delimited text file in the point-north-east-elevation-description (PNEZD) format so they can be used in other programs. The first four lines of an electronic survey data file shall include:

- |                        |   |
|------------------------|---|
| (1) Project Name       | (5) Projection (if applicable, see §NM540.08) |
| (2) Date of Survey     | (6) Datum (if applicable, see §NM540.08)      |
| (3) Surveyor’s Name(s) |   |
| (4) Instrument Used    |   |

(c) For Class V - VIII jobs and other major projects in which work is usually performed by formal contract; or, if the notes may be needed as supporting data in potential legal actions:

- (1) Bound field notebooks shall be used to record engineering surveys and notes when electronic data collection systems are not used.

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PART 540 - FIELD SURVEYS  
SUBPART E – SUPPORT OPERATIONS

NM540.01(c)(2)

- (2) When electronic data collection systems are used to record the engineering surveys, an unaltered hardcopy of the survey data shall be downloaded from the data collector and permanently filed with the bound field notebook which contains other important project survey information for that project.
  
- (d) Loose-leaf notebooks, special forms, or hardcopies of downloaded electronic data may be used for recording engineering surveys, notes, and design data for on-farm conservation practices (Class I - V jobs) such as ponds, terraces, diversions, waterways, and animal waste management facilities. The documentation for the engineering surveys for conservation practices shall provide the minimum information as outlined in the sample notes in Technical Release No. 62 in a format similar to the sample.
  
- (e) Survey drawings prepared in electronic format shall be in accordance with the following:
  - (1) Coordinates shall be identified.
  - (2) Data file will be an AutoCAD drawing (\*.dwg) or ASCII DXF format.
  - (3) The AutoCAD file shall be purged to remove unused blocks.
  - (4) A layer table (legend) shall be submitted defining layer names used to describe various components of the drawing, such as contours, trees, roads, *et cetera*.
  - (5) DEM, TIN or TNN used to develop contour information shall be on a separate drawing layer in the AutoCAD file and, if applicable, as a separate file in its native format.
  - (6) The contour lines shall be drawn using POLYLINES.
  - (7) All contour data shall be on a separate layer in the AutoCAD file. This file shall include contour lines, base lines, benchmarks, monuments, spot elevations, *et cetera*. All other features such as roads, trees, buildings, *et cetera*, shall be supplied as a separate file.
  - (8) Point files including but not limited to the locations of drill holes, test pits, *et cetera* shall be electronically filed in a comma-delimited text file in the point-north-east-elevation-description (PNEZD) format so they can be used in other programs.

§NM540.02 Precision and accuracy

All survey work using traditional surveying equipment (transit) shall be third order (ordinary surveys as defined in Chapter 1 of the Engineering Field Manual) or better for all projects other than small watershed projects. All survey work using traditional surveying equipment shall have an accuracy of 1:20,000 (such as 1 foot in 20,000 feet) or better for all projects involved with the small watershed program (new work, repairs, or rehabilitation work). The error of closure on bench levels shall not exceed  $\pm 0.05$  foot times the square root of the circuit in miles.

PART 540 - FIELD SURVEYS  
SUBPART E – SUPPORT OPERATIONS

NM540..04

The positional accuracy of a station shall be sixty millimeters (60 mm) or better in urban areas and one hundred millimeters ( 100 mm) or better in rural areas.

§NM540.03 Staking

- (a) Basic stakes - Basic staking is defined as alignment and grade stakes for structures other than embankments and channels. For channels and embankments, basic staking includes alignment and grade stakes plus slope stakes at the normal interval for the work. Normal interval is 100-foot stations on tangents and may decrease to as little as 25 feet on sharp curves. When construction pay quantities are determined from basic staking, a fair and equitable description of the ground surface is needed for the calculation of performance quantities.
- (h) Construction stakes - Additional stakes necessary for forming the structure, constructing the slopes of embankments above the slope stakes, or constructing the sides of channels below the slope stakes or between stations are “construction” stakes. They are the responsibility of the construction contractor.
- (i) Establishing Control Points - A minimum of three permanent benchmarks and/or monuments shall be established and referenced outside the anticipated construction area. When the survey work is to be coordinated with aerial photographs, a minimum of five points shall be established and surveyed that can be identified on an aerial photograph.
- (j) Base Line - A base line consisting of a minimum of three intervisible points coinciding with the centerline of the dam or other structure shall be established with monuments. The ends of the base line should be located near the limits of the project area and beyond the anticipated construction area. The third monument for dams should be located on the flood plain. Angle points, if any, in the base line shall be referenced with monuments.

Base line points in solid rock shall consist of a chiseled mark adequately described or nails firmly set and referenced.

§NM540.04 Contractor surveys

Contractor surveys are applicable to construction contracts and conservation operations that require the Contractor to provide basic staking; quantity surveys, measurements, and computations for progress payments; and when authorized, provide original and final surveys for final quantity determinations. The National Engineering Handbook, Part 642, shall be used to provide contract requirements for contractor surveys. Surveys completed under conservation operations shall follow the requirements of the Engineering Field Handbook, Chapter 1, “Engineering Surveys”. Primary Controls, which include items such as baselines, control points, and bench marks, shall be sufficiently defined to allow the contractor to perform the required surveys.

NM540-3

PART 540 - FIELD SURVEYS  
SUBPART E – SUPPORT OPERATIONS

NM540.05

§NM540.05 Checking

NRCS employees or individuals under contract with NRCS are to conduct quality assurance checking. Checking shall include the visual review of survey markings, notes, and random surveys to check for accuracy.

§NM540.06 Responsibility

The information from basic staking of embankments and channels normally becomes the basis for measurement of quantities of earthwork; therefore, it is to be done by NRCS, an A-E, the local contracting organization, the owner, or the contractor as prescribed within appropriate construction contracts, or the General Manual

§NM540.07 Monuments

- (a) Permanent benchmarks shall consist of bronze pins or caps set in concrete and shall be positioned such that they will not be disturbed or made useless by construction operations. The location, description, and elevation of each benchmark shall be accurately recorded in the notes and shown on maps and drawings. (Note that benchmarks can also be monuments, but monuments cannot be benchmarks since the elevation of a monument is unknown.)
- (b) As a minimum, permanent monuments shall consist of capped No. 5 reinforcing bar 36 inches long, firmly set, driven flush with the ground, and witnessed by a six foot long steel fence post. Each monument shall be referenced by ties to three nearby permanent or semi-permanent landmarks. In the absence of nearby landmarks, three hubs, two inch by two inch by twelve inches in length shall be used.

The location and description of each monument shall be accurately recorded in the notes and shown on maps and drawings. Capped reinforcing bars set during planning, design, or construction shall be marked with the following information as a minimum:

- (1) Abbreviation of project name and site number.
  - (2) Date cap was set.
  - (3) Point identification such as station number, AP number, *et cetera*.
  - (4) Type of survey line, such as centerline, R/W, RP, *et cetera*.
- (c) A six-foot long steel fence post firmly set three feet from the point shall witness each benchmark and base line point.

NM540-4

(210-V-NEM, NM Amendment 43, October 2006

PART 540 - FIELD SURVEYS  
SUBPART E – SUPPORT OPERATIONS

NM540.08(b)(6)

§NM540.08 Global positioning system surveys

- (a) It is essential that all equipment be maintained, transported, and stored properly in accordance with the manufacturer's recommendations. In addition, the following is recommended prior to traveling to the site:
- (1) Make sure that all batteries are charged.
  - (2) Replace unserviceable batteries as soon as possible.
  - (3) Inspect the condition of all cables.
  - (4) Check the tribrach to assure it is not damaged
  - (5) Inspect the bipods and tripods. (They should be cleaned at the end of each survey day.)
  - (6) Keep software updated.
  - (7) Keep abreast with the current geoid. A **geoid** is an equipotential surface which (approximately) coincides with the mean ocean surface. It is often referred to as a close representation or physical model of the figure of the Earth. According to C.F. Gauss, it is the "mathematical figure of the Earth", in fact, of the gravity field. It is that equipotential surface (surface of fixed potential value) which coincides on average with mean sea level.
- (b) A site visit is recommended in planning the field survey. Things to look for and establish include:
- (1) Benchmarks to establish control. Any benchmarks used in providing surveys within the project area shall be on North American Datum 1983 (NAD 83) for horizontal and North American Vertical Datum 1988 (NAVD 88) for vertical.
  - (2) A high point or position to setup the Base Station that will be clear of any obstructions such as trees, electrical posts, overhead power lines, transformers, buildings, *et cetera*.
  - (3) Place flagging and/or wooden stakes at all critical points of interest to survey.
  - (4) Plan for an offset procedure ahead of time if there is any critical point located in an obstructed area hard to detect for satellites to obtain a reading.
  - (5) Plan for the use of a Total Station (not GPS) if necessary in certain circumstances where to obtain a reading may not be possible due to the lack of satellites detected for a good reading.
  - (6) Obtain landowner permission if necessary.

NM540-5

PART 540 - FIELD SURVEYS  
SUBPART E – SUPPORT OPERATIONS

NM540.08(c)

(c) The following items shall be reported in a survey notebook:

- (1) Date.
- (2) Crew members.
- (3) Site.
- (4) Weather conditions.
- (5) Identify project.
- (6) Survey started time.
- (7) Survey ended time.
- (8) Base station approximate geodetic location and elevation.
- (9) Base station antenna height in meters.
- (10) Rover antenna in feet or meters.
- (11) Picture of the established base station and area around.
- (12) Problems encountered.

(d) Surveying procedure:

- (1) Establish connection between the rover and the base station.
- (2) Select the type of surveying to perform:
  - (i) Static.
  - (ii) Fast static.
  - (iii) Real Time Kinematics (RTK) only.
  - (iv) Real Time Kinematics (RTK) and Infill (Post Processed Kinematics. The RTK and Infill is recommended to use to later send the raw data to OPUS at National Geodetic Survey for the corrected point at the Base. OPUS will send back the corrected point within  $\pm 0.1$  ft.
  - (v) Do not forget to reset the rover antenna height again if you have lowered the antenna for any reason.

(e) The following surveying terms and abbreviations are to be used and as applicable:

AS	auxiliary spillway	MH	manhole
BC	beginning-of-curve	MON	monument
BLDG	building	NG	natural ground
BM	benchmark	OS	offset
BS	backsight	PC	point of curve
CB	catch basin	PI	point of intersection
CONC CULV	concrete culvert	PT	point of tangency

NM540-6

(210-V-NEM, NM Amendment 43, October 2006

PART 540 - FIELD SURVEYS  
SUBPART E – SUPPORT OPERATIONS

NM540.09(b)

CMP	corrugated metal pipe	RD	road
CSP	corrugated steel pipe	ROW	right-of-way
DIA	diameter	RP	reference point
EC	end-of-curve	RT	right
FE	fence	STA	station
HYD	hydrant	STM	storm sewer
HWY	highway	TBM	temporary benchmark
IB	iron bar	TC	tangent-to-curve
INV	invert	TP	turning point
IP	iron pipe	XSEC	cross section
IS	intermediate sight	WM	water main
LT	left		

Additional codes may be used and a code list is to be maintained with the data.

- (f) The raw data shall be transferred to a computer to facilitate the use of the data in various software programs.
- (1) All survey data shall be first checked and calibrated if necessary using the appropriate software.
  - (2) Data shall be exported to Microsoft Excel, ASCII, or plain text.
  - (3) Exported data shall be in the format of point, north, east, elevation, description.

§NM540.09 Topographic surveys

- (a) The maximum contour interval shall be 2 feet. A contour interval of 1 foot should be used to the maximum extent possible.
- (b) Ninety percent of the elevations determined from the contours of the topographic maps shall have accuracy with respect to true elevation of one-half contour interval or better and the remaining 10 percent of such elevation shall not be in error by more than one contour interval. This accuracy shall apply only to the contours that are on each map. Thus, in each particular area where the intermediate contours have had to be omitted because of steepness of the ground slopes and only the index contours are delineated on the maps, the accuracy stipulations apply to the contour interval of the index contours. Wherever the intermediate contours are not omitted, of course, the accuracy is applicable to the contour interval specified for the topographic maps. In densely wooded areas where heavy brush or tree cover fully obscures the ground and the contours are shown as dashed lines, they shall be plotted as accurately as possible while making full use of spot elevations in places where the ground is visible.

NM540-7

PART 540 - FIELD SURVEYS  
SUBPART E – SUPPORT OPERATIONS

NM540.09(c)

- (c) Each horizontal control point used for photogrammetric surveys shall be plotted on the finished map within the coordinate grid in which it should lie to an accuracy of 1/100 of an inch of its true position as expressed by the plane coordinates calculated for the point.
- (d) Ninety percent of all planimetric features shall be plotted so that their position on the finished maps shall be accurate to within at least 1/40th of an inch of their true coordinate position, as determined by the test surveys and none of the features tested shall be misplaced on the finished map by more than 1/20th of an inch from their true coordinate position.
- (e) Ninety percent of all spot elevations placed on the maps shall have an accuracy of at least one-fourth the contour interval and the remaining 10 percent shall be not in error by more than one-half the contour interval.

§NM540.10 Profiles and cross sections

- (a) Maximum profile stationing shall be 100 feet with intermediate stations at all significant breaks in topography when using traditional transit field surveys or total station surveys.
- (b) The maximum stationing on the cross-sections shall be 50 feet with additional stations at all significant breaks in topography when using traditional transit field surveys.
- (c) The maximum vertical error shall be plus or minus 0.1 foot.
- (d) Centerline of Dam - Stationing shall progress from left to right when looking in a downstream direction. Station 10+00 shall be established on the left abutment near the crest of the dam for new dams. Stationing shall be as reported by the as-built drawings for existing dams.
- (e) Centerline of Principal Spillway - Profile the line shown on the reservoir map as the principal spillway. The intersection angle with the centerline of the dam shall be 90 degrees unless shown otherwise. Stationing shall increase in a downstream direction. The intersection with centerline of the dam shall be Station 5+00 for new dams. Stationing shall be as reported by the as-built drawings for existing dams.
- (f) Natural Stream Channel - Begin plan and profile surveys of the stream channel at approximately 400 feet channel distance upstream from the dam centerline using chords in the channel for horizontal distance. Continue the survey to the last cross-section specified for “Natural Stream Channel for Setting Principal Spillway Outlet” and/or “Valley Cross Section for Hazard Classification”. Horizontal accuracy shall be the same as required of the topographic survey. The thread of the stream or water line at low water shall be shown on the plan. The profile need not go below the low water surface, except that the streambed shall be profiled through riffles.

PART 540 - FIELD SURVEYS  
SUBPART E – SUPPORT OPERATIONS

NM540.11

- (g) Centerline of Downstream Affected Roads - The crown of the first road downstream from the dam and all succeeding downstream roads to the 100-year flood elevation shall be profiled to an elevation which is equal to or higher than six tenths the planned height of the dam above the stream channel. Stationing shall progress from left to right when looking in a downstream direction. The centerline of the bridge or culvert shall be located on the road profile. Horizontal accuracy shall be the same as required of the topographic survey.
  
- (h) Natural Stream Channel for Setting Principal Spillway Outlet Elevation - The natural stream channel shall be cross sectioned at distances approximately 400, 800, 1200, and 1600 feet downstream from the approximate downstream end of the principal spillway conduit. The cross section shall be taken perpendicular to bank full stream flow. The cross section shall define the bottom width of the channel and the top of the bank and shall extend at least 25 feet beyond the bank. Distances on the cross section shall be referenced to zero at the approximate centerline of the channel and shall be measured right and left when facing in the direction of increasing stationing.
  
- (i) Valley Cross Section for Hazard Classification - The valley downstream from the dam shall be cross sectioned at intervals not to exceed 2500 feet starting from the centerline of the dam and extending down to the point of intersection of the breach wave crest and the flood level of the 100-year frequency discharge from the uncontrolled drainage area. If development exists downstream from this point and is below the 100-year flood level, the cross sections must be extended to include such development or until the depth of the flooding from the breach discharge no longer creates a hazard. Cross sections shall be taken more often if the valley cross sectional area changes significantly. Cross sections shall also be taken at isolated homes, one hundred feet upstream and downstream from the centerline of roads, and other significant locations as necessary. The cross section shall be taken perpendicular to the general flood plain flow direction. The cross section shall define the bottom width of the channel and the top of the bank, shall be perpendicular to stream flow within bank-full channel, and shall extend vertically to at least six tenths of the planned dam height above the stream channel. Distances on the cross section shall be referenced to zero at the approximate centerline of the channel and shall be measured right and left when facing in the direction of increasing stationing.

§NM540.11 Drainage structures

Any bridges or other structures in the channel within the distance specified in “Natural Stream Channel for Setting Principal Spillway Outlet” or “Valley Cross Section for Hazard Classification” shall be measured in sufficient detail to permit determination of the hydraulic characteristics of the bridge or structure. This may include, but not be limited to, a cross section of the bridge or structure to give the waterway area, skew to flow direction, the shape and number of piling and/or piers, width of bridge or length of conduit, and the size and angle of wing walls and flow line elevations.

NM540-9

PART 540 - FIELD SURVEYS  
SUBPART E – SUPPORT OPERATIONS

NM540.12

§NM540.12 Building elevation surveys

Threshold elevations at each building in the potentially inundated area shall be determined to within  $\pm 0.3$  feet. The Project Economist shall be present during building elevation surveys to assure that appropriate elevations are collected and help explain project purposes to residents as necessary. Additional elevations shall be recorded as indicated by the Project Economist to support accurate economic evaluations, particularly as required to document non-threshold related elevations of damage (e.g. basement windows, et cetera).

§NM540.13 Surveys for geologic investigations

The geologist and the surveyor are to jointly stake the area(s) to be profiled for a geological investigation. The profiles shall be parallel to the dam base line. In case of the dam base line consisting of two or more courses, the one that best fits the borrow area shall be used.

The maximum error of closure of unadjusted horizontal distance shall be 1 foot in 1000 feet. The maximum unadjusted horizontal angular error (in seconds) shall not exceed 60 times the square root of the number of points where angles are measured.

The maximum unadjusted vertical error (in feet) shall not exceed 0.5 times the square root of the circuit distance in miles.

(a) Dam Borrow Area(s)

The borrow area(s) shall be profiled at 200-foot intervals beginning 200 feet upstream from the base line.

All stationing shall originate at the dam base line.

Each profile upstream from the base line shall be designated alphabetically starting with A.

Each profile downstream from the base line shall be designed alphabetically starting with AA.

Borrow hole locations in the borrow area shall be tied to the base line.

The base line is not letter designated.

The station on the profiles shall be identified by station and letter such as 19+00, A.

Each profile shall show all significant breaks at intermediate stations.

NM540-10

PART 540 - FIELD SURVEYS  
SUBPART E – SUPPORT OPERATIONS

NM540.13(b)

(b) Auxiliary Spillway Area

A 100-foot by 100-foot grid system shall be used in the auxiliary spillway area using the centerline of dam as the base line.

Grid lines perpendicular to the base line shall originate at full stations.



## PART 541 - DRAFTING AND DRAWINGS

NM541.2C

### §NM541.0 General

- D. Drawings are to be prepared in accordance with Part 641 of the National Engineering Manual and the New Mexico Drafting Guidance.

### §NM541.2 Sheet Size

- C. Half-size drawings shall be used for engineering drawings of waste storage facilities.



PART 542 - SPECIFICATIONS  
SUBPART A – CONSTRUCTION SPECIFICATIONS

NM542.01(c)

§NM542.01 Scope

- (a) Construction specifications are to be developed as outlined in National Engineering Handbook (Part 642 Specifications for Construction Contracts) and incorporated in all contracts prepared for installing works of improvement when the NRCS provides assistance, except:
- (1) Designs prepared for lined waste storage facilities. Natural Resources Conservation Service Conservation Practice Construction Specifications shall be used for lined waste storage facilities.
  - (2) Designs prepared for less complex works of improvement (Class V or smaller) shall have design drawings and specifications of sufficient detail to support quality installation and reflect the intent of the designer in solving resource concerns. The construction specifications may be those published in Part 642 of the NEH or those published in Section IV of the Field Office Technical Guide. The adequacy of the drawings and specifications shall be determined by the responsible engineer or employee with the level of engineering approval authority necessary for the conservation practice or structure to be applied.
  - (3) Contracts for basic recreation facilities.
  - (4) Separate contracts for seeding, sodding, or fencing.
  - (5) Contracts for works of improvement not designed by NRCS and installed under contracts administered by the project sponsors without using standard NRCS Construction and Material Specifications or NRCS Conservation Practice Conservation Specifications. This arrangement may occur when sponsors design or hire the engineering design and the NRCS retains quality assurance responsibilities.
- (b) *There is no New Mexico amendment to this section.*
- (c) *There is no New Mexico amendment to this section.*

NM542.01-1



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01	02/1980	<del>Part 511 - Design, Subpart B - Documentation, §NM511.11</del>	Void - See NM Amendment 43
		<del>Part 511 - Design, Subpart D - Exhibits, Exhibits A, B and C, §NM511.11</del>	Void - See NM Amendment 43
02	07/1980	<del>Part 500 - Introduction, §NM500.02</del>	Void - See NM Amendment 26
		<del>Part 501 - Authorizations, Subpart F - Snow Surveys and Water Supply Forecasting, §NM501.65</del>	Void - See NM Amendment 43
		<del>Part 501</del>	Void - See NM Amendment 20
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		<del>Part 503 - Safety, Subpart A - Engineering Activities Affecting Utilities, §NM503.02</del>	Void - See NM Amendment 43
		<b>Part 504 - Special Investigations, Studies, and Reports, Subpart A - Problems and Deficiencies, §NM504.03</b>	<b>Current</b>
		<del>Part 510 - Planning, §NM510.01</del>	Void - See NM Amendment 43
		<del>Part 512 - Construction, Subpart C - Evaluation of Construction Materials, §NM512.21</del>	Void - See NM Amendment 43
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		<b>Part 523 - Irrigation, §NM523.00</b>	<b>Current</b>
		<del>Part 530 - Hydrology, Subpart B - Hydrologic Procedures and Criteria, §NM530.11</del>	Void - See NM Amendment 43
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		<del>Part 536 - Structural Engineering, §NM536.09</del>	Void - See NM Amendment 43
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04	02/1981	<del>Part 513—Operation and Maintenance, Subpart A—Guidelines, §NM531-80</del>	Void - See NM Amendment 25
05	03/1981	<del>Part 511—Design, Subpart A—Procedures, §NM511.04 and Exhibit</del>	Void - See NM Amendment 43
06	09/1981	<del>Part 536—Structural Engineering</del>	Void
07	09/1981	<del>Part 501—Authorizations, Subpart A—Review and Approval</del>	Void
		<del>Part 537—Environmental Engineering, §NM537.01</del>	Void - See NM Amendment 43
		<b>Standard Drawings</b>	<b>Current</b>
08	11/1981	<del>Revised Attachment B, §NM513.05-80</del>	Void
09	03/1982	<del>Part 534—Hydraulics, §NM534.00-80</del>	Void - See NM Amendment 43
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11	04/1982	<del>Part 512—Construction, §NM512.34, Construction Quantities</del>	Void - See NM Amendment 13
12	04/1982	<del>New Index to Standard Drawings, Transmit Additional Drawings</del>	Void
13	05/1982	<del>Part 512—Construction, §NM512.34-80, Construction Quantities</del>	Void - See NM Amendment 43
14	05/1982	<del>Part 501</del>	Void - See NM Amendment 20
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15	07/1982	<del>Part 513—Operation and Maintenance, Subpart A—Guidelines, §NM513.05, Exhibit B, NM Dam Inventory</del>	Void
16	10/1982	<del>Part 501—Authorizations, Subpart A—Review and Approval</del>	Void
		<del>Part 501—Authorizations, Subpart G—Exhibits, Exhibit E, §501.73-80</del>	Void - See NM Amendment 43
17	09/1983	<b>Part 536 - Structural Engineering, §NM536.20 - Design Criteria for Reinforced Concrete</b>	<b>Current</b>
18	08/1983	<del>Part 530—Hydrology, Subpart A—Hydrologic Investigations, §NM530.03</del>	Void - See NM Amendment 43
19	01/1984	<del>Part 512—Construction, Subpart E—Equipment, Records, and Coordination, §NM512.41—Photographic Documentation</del>	Void - See NM Amendment 43
20	10/1983	<del>Part 501—Authorizations, Subpart A—Review and Approval, §NM501.09, State Engineering Job Approval Authority</del>	Void

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21	10/1983	<del>Part 532—Biological and Agricultural Engineering, Supplement to Part 532, Sedimentation Investigations and Services</del>	Void - See NM Amendment 38
22	01/1984	<del>Part 521—Pollution Abatement and Water Quality, §NM521.01</del>	Void - See NM Amendment 30
23	02/1985	<del>Part 511—Design, Subpart A—Procedures, SFDU Operating Procedures</del>	Void
24	01/1985	<del>Part 501—Authorizations, Subpart G—Exhibits, Exhibit B, New Mexico State Engineer's Checklist, §NM501.73-80</del>	Void - See NM Amendment 43
25	01/1986	<del>Subchapter B—Management, Table of Contents for Parts 510, 511, 512 and 513</del>	Void - See NM Amendment 43
		<del>Part 506 (Old System) [Part 503 in the new system]—Dam Safety</del>	Void - See NM Amendment 39
		<del>Part 513—Operation and Maintenance, Subpart A—Guidelines, §NM513.00-80</del>	Void - See NM Amendment 43
		<del>Subchapter C—Applications, Table of Contents for Parts 520, 521 and 523</del>	Void - See NM Amendment 43
		<del>Part 520—Soil and Water Resource Development, Subpart C—Dams, §NM520.27 and §NM520.28</del>	Void - See NM Amendment 43
		<del>Subchapter D—Technology, Table of Contents for Parts 530, 531, 532, 534, 536 and 537</del>	Void - See NM Amendment 43
		<del>Subchapter E—Support Operations, Table of Contents for Parts 540 and 544</del>	Void - See NM Amendment 43
		<del>Part 540—Field Surveys, §NM540.03</del>	Void - See NM Amendment 43
26	01/1986	<del>Part 500—Introduction, Subchapter A—General, §NM500.02</del>	Void - See NM Amendment 43
		<del>Part 501</del>	Void - See NM Amendment 28
27	06/1986	<del>Part 512—Construction, Subpart E—Equipment, Records, and Coordination, §NM512.41</del>	Void - See NM Amendment 43
		<del>Part 542—Specifications, Subpart A—Construction Specifications, §NM542.01</del>	Void - See NM Amendment 43
28	06/1988	<del>Part 501—Authorizations, Subpart A—Review and Approval</del>	Void - See NM Amendment 36
		<del>Part 511—Design, Subpart C—Instrumentation, §NM511.24</del>	Void - See NM Amendment 43
29	08/1988	<del>Part 510—Planning, Subpart B, §NM510.02</del>	Void - See NM Amendment 43
		<del>Part 510—Planning, Subpart B, §NM510.02 Exhibits A, B, C, D, and E (Form NM-ENG-251)</del>	Void - See NM Amendment 43
		<del>Part 511—Design</del>	Void

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30	01/1989	<del>Part 521 - Pollution Abatement and Water Quality, §NM521.01</del>	Void - See NM Amendment 32
31	01/1990	<del>Part 511 - Design</del>	Void - See NM Amendment 33
32	03/1990	<del>Part 521 - Pollution Abatement and Water Quality Improvement</del>	Void - See NM Amendment 42
33	10/1991	<del>Part 511 - Design</del>	Void
34	04/1992	Part 501 - Authorizations, Subpart A - Review and Approval, §NM501.03	Current
		<del>Part 501 - Authorizations, Subpart G - Exhibits, Exhibit C, Engineering Job Approval Authority, §NM501.73-80</del>	Void - See NM Amendment 43
35	11/1995	Distributed National Amendment 22	
36	05/1998	<del>Part 501 - Authorizations, Subpart A - Job Approval Authority, §NM501.04</del>	Void - See NM Amendment 42
37 (1)	05/1998	<del>Part 501 - Authorizations, Subpart A - Job Approval Authority, §NM501.04</del>	Void - See NM Amendment 42
37 (2)	06/1998	Distributed National Amendment 23	
38	07/1998	Distributed National Amendment 24	
39 (1)	03/1999	Part 503 - Safety, Subpart D - Dam Safety, §NM503.52, §NM503.53, §NM503.54, §NM503.55, and §NM503.57	Current
		<del>Part 531 - Engineering Geology, Subpart G - Erosion and Sedimentation Investigations and Services</del>	Void - See NM Amendment 40
39 (2)	12/2003	<del>Part 510 - Planning, Subpart B, §NM510.02, Exhibit F</del>	Void - See NM Bulletin No. 210-4-5 dated 09/07/2004
		<del>Part 511 - Design, Subpart A - Procedures</del>	Void - See NM Amendment 42
40	12/1999	Part 531 - Geology [New Issue by National]	
41	03/2000	Distributed National Amendment 26	
42	03/2006	Part 501 - Authorizations, Subpart A - Review and Approval, §NM501.04	Current except for Page NM501.04-1
		Part 511 - Design, Subpart A - Procedures, §NM511.03	Current
		Part 521 - Pollution Abatement and Water Quality Improvement, §NM521.01	Current

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		Part 501 - Authorizations, Subpart A - Review and Approval §NM501.04(a)	
		Part 501 - Authorizations, Subpart F - Snow Surveys and Water Supplying Forecasting §NM501.62 Responsibilities in New Mexico	
		Part 503 - Safety, Subpart A - Engineering Activities Affecting Utilities §NM503.00 General §NM503.02 General Considerations §NM503.04 Buried Utilities	
		Part 506 - Technical Materials §NM506.03 Metrification	
		Part 511 - Design, Subpart A - Procedures §NM511.04 Design analysis	
		Part 511 - Design, Subpart B - Documentation §NM511.10 Scope	
		Part 511 - Design, Subpart C - Instrumentation §NM511.24 Instrumentation plans §NM511.25 Instrumentation monitoring and reporting	
		Part 512 - Construction, Subpart C - Evaluation of Construction Materials §NM512.21 Evaluation procedures	
		Part 512 - Construction, Subpart D - Quality Assurance Activities §NM512.32 Quality Assurance	
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		Part 520 - Soil and Water Resource Development, Subpart C - Dams §NM520.27 Emergency action plans	

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		Part 540 - Field Surveys, Subpart E - Support Operations §NM540.00 General §NM540.01 Format §NM540.02 Precision and accuracy §NM540.03 Staking §NM540.04 Contractor surveys §NM540.05 Checking §NM540.06 Responsibility §NM540.07 Monuments §NM540.08 Global positioning system surveys §NM540.09 Topographic surveys §NM540.10 Profiles and cross sections §NM540.11 Drainage surveys §NM540.12 Building elevation surveys §NM540.13 Surveys for geologic investigations	
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