

12 July 2021 Flooding in Lancashire

Flood & Water Management Act 2010

Section 19 Investigation Report

July 2026

Contents

Executive Summary.....	Page 2
Section 1 - Introduction and purpose of the report.....	4
Section 2 - Definitions and responsibilities.....	5
Section 3 – Methodology.....	11
Section 4 – The Weather Event.....	12
Section 5 – Response to the Flooding.....	13
Section 6 – Next Steps.....	15
Section 7 – Summary and Conclusions.....	17
Appendix A – Section 19 investigation and findings (by District)	
Appendix B – List of streets affected (by District)	



Executive Summary

On Monday 12 July 2021, parts of Lancashire were badly affected by extreme rainfall and surface water flooding. Conditions of heavy rain that afternoon and evening brought multiple severe impacts, including closure of the outside southbound lane on the M6 due to standing water between J32 (Broughton) and J31A (Haighton/Blacow), and damage to classrooms and electrical systems in Penwortham Girls High School.

From the records provided after the event by affected people and by Lancashire's flood risk management authorities, we have identified that 91 properties flooded during this event: 77 homes and 14 other properties. Of the affected homes, 14 were flooded internally to at least one habitable room. There were also multiple instances of flooded highways which have not been included in this Section 19 report.

The weather event on this date resulted in repeated flooding of a small number of residential properties in Aughton (near Ormskirk in West Lancashire) and caused a significant impact to the regional/national transport network extending longer than 3 hours at Preston railway station.

A report under Section 19 of the Flood & Water Management Act 2010 is required to document the investigations made into the flood events occurring on 12 July 2021 that have been reported to the Council either directly by our residents or their representatives. This report is required to identify where further studies or works are needed, and if so by which risk management authority or authorities.

Appendix A to this covering report identifies whether such further work is required at any of the various affected localities.

The risk management authorities that had a role in this flooding incident were:

- a) United Utilities plc as the water company;
- b) Lancashire County Council as lead local flood authority;
- c) Lancashire County Council as the local highway authority; and
- d) National Highways (formerly Highways England) as the highway authority for the affected motorway network.

The lead local flood authority is continuing to investigate obstructions to a local watercourse downstream from one of the reported flooded locations to help in managing local surface water flood risks. The local highway authority has 2 outstanding investigations to conclude. The other risk management authorities have no outstanding works or investigations associated with this flooding event.

It is a key finding of this Section 19 investigation that the reported flooding was principally in built-up areas of Lancashire where the drainage systems were temporarily overwhelmed by the intensity of the rainfall.

There are currently no widespread programmes of investment to improve the resilience of the local highway drainage systems to the increasingly heavy rainfall incidents that Lancashire has been experiencing in recent years.

In 2023, United Utilities plc published its Drainage and Wastewater Management Plan to set out how its services can become more sustainable in the face of ongoing climate change (found on its website here: [Drainage and wastewater management plan \(unitedutilities.com\)](https://www.unitedutilities.com)). Yorkshire Water plc has established its own Drainage and Wastewater management plan along the same lines. Various projects under these

plans are already identifying where there may be options in Lancashire for reducing flood and sewage spill risks associated with public sewers.

There are also achievable and sustainable responses available for communities seeking improved protection from similar rainfall events should these occur in the future. Depending on particular local circumstances responses might include any combination of the following suggestions:

- Improved drainage system maintenance regimes;
- Increased area of absorbent land within urbanised streets (for example more trees and shrubs, increased unpaved areas in highways, gardens & yards);
- Localised temporary road closures to reduce bow waves washing off streets onto private property;
- Improved protection against water-ingress at vulnerable properties;
- Improved 'warning and informing'-type communications to trigger appropriate action, temporary defences etc.

Measures of these types can be very effective at more safely managing the peaks of an intense rainstorm, and at giving local people more control over the way they are affected in such weather conditions.

All the flood risk management authorities are ready and willing to work with local community groups and with the Town and Parish Councils to identify and introduce measures appropriate for their local circumstances. We are all committed to finding better ways to make our offers more widely known about, and to helping people to access our teams for advice.

Any individuals who want to consider what they might do for themselves will find practical and realistic suggestions on the dedicated North West Flood Hub: thefloodhub.co.uk

Working with communities and working in partnership are key recommendations of the national flood risk management strategy and all the Lancashire Risk Management Authorities recognise the value and importance of the opportunities that arise through appropriate engagement with our communities.

SECTION 1 – INTRODUCTION AND PURPOSE OF THE REPORT

1.1 Flood & Water Management Act 2010 Duty

1.1.1 Lancashire County Council as a Lead Local Flood Authority has a duty to investigate flooding in accordance with Section 19 of the Flood and Water Management Act 2010 (the Act) as follows:

1.1.2 Section 19 states:

On becoming aware of a flood in its area, a lead local flood authority must, to the extent that it considers it necessary or appropriate, investigate:

- a) Which risk management authorities have relevant flood risk management functions, and
- b) Whether each of those risk management authorities has exercised, or is proposing to exercise, those functions in response to the flood.

Where an authority carries out an investigation under subsection (1) it must:

- a) Publish the results of its investigation, and
- b) Notify any relevant risk management authorities.

1.1.3 The terms 'risk management functions' and 'risk management authorities' are defined in Section 2 of this report.

1.2 Lancashire & Blackpool Local Flood Risk Management Strategy

1.2.1 In addition to the requirements of Section 19 of the Act, the Lancashire and Blackpool Local Flood Risk Management Strategy sets out how flood risk should be managed locally.

1.2.2 This Strategy states that the Section 19 investigations will help to:

- Improve the understanding of flood risk by providing an invaluable tool for understanding the sources and mechanisms of flooding;
- Identify assets that have a flood risk management function, which may need to be designated; and
- Identify where additional works and studies are likely to be necessary, that the county council or other risk management authorities can integrate into their prioritised flood risk management plans.

SECTION 2 - DEFINITIONS AND RESPONSIBILITIES

2.1 Key Definitions

2.1.1 The Risk Management Authorities

2.1.1.1 The risk management authorities are identified in the Act as follows:

- a. The Environment Agency,
- b. The lead local flood authority,
- c. A district council for an area for which there is no unitary authority,
- d. An internal drainage board,
- e. A water company, and
- f. A highway authority.

2.1.1.2 Each of these organisations has powers and duties under various legislation and regulations for the responsible management of natural water, flood risk and in some cases coastal erosion.

2.1.1.3 The Act requires all the flood risk management authorities to cooperate with other relevant authorities in the exercise of their flood and coastal erosion risk management functions.

2.1.1.4 In Lancashire, the flood risk management authorities support partnership working in the following ways:

- at operational levels by joint investigations and through the Operational Making Space for Water meetings;
- at tactical level by sharing priorities and direction between organisational managers, and
- at strategic level by engaging with Councillors/Cabinet Members/Senior Managers.

2.1.1.5 Lancashire, Blackpool and Blackburn-with-Darwen are also represented on the North West Regional Flood and Coastal Committee where cross-boundary projects, resources and data are shared with Cumbria, Greater Manchester, Merseyside and Cheshire.

2.1.1.6 The village of Earby in Pendle District is a special case in that it lies within a river catchment that falls towards North Yorkshire, so its local Environment Agency services are supplied through the Yorkshire team. This gives the Lancashire partnership a direct connection to the Yorkshire Regional Flood & Coastal Committee. Earby also receives services from the Earby and Salterforth Internal Drainage Board, which replaces a number of the lead local flood authority functions.

2.1.2 The Risk Management Functions

2.1.2.1 The risk management authorities have responsibility for flood risk management functions as defined under Section 4 (2) of the Act:

- (a) a function under this Part,



- (b) a function under section 159 or 160 of the Water Resources Act 1991,
- (c) a flood defence function within the meaning of section 221 of that Act,
- (d) a function under the Land Drainage Act 1991,
- (e) a function under section 100, 101, 110 or 339 of the Highways Act 1980, and
- (f) any other function, under an enactment, specified for the purposes of this section by order made by the Minister.

2.1.3 Riparian Landowners

2.1.3.1 The legal term 'riparian' is applied to landowners who own land adjoining or containing a river or watercourse. They have certain rights to use the water flowing across their land for their own purposes, and in regard to flood risk management they also have a number of responsibilities, including the following:

- to maintain the bed and banks of the watercourse, and also the trees and shrubs growing on the banks;
- to clear any debris, even if it did not originate from their land. This debris may be natural or man-made;
- to keep any structures within their ownership clear of debris. These structures include culverts, trash screens, weirs and mill gates.

2.1.3.2 If riparian landowners do not fulfil their responsibilities, they may face enforcement action taken by the relevant risk management authorities.

2.1.4 Interconnections between responsibilities

2.1.4.1 Public sewers in Lancashire are principally the responsibility of United Utilities plc or Yorkshire Water plc. Copies of the record maps indicating the location of public sewers in Lancashire are held in the water companies' head offices. These companies also keep records of pumping stations, and any water treatment works which form part of the public sewage system.

2.1.4.2 Private drainage systems are the responsibility of each owner whose property it drains. Where more than one property uses a private pipe, responsibility is normally shared proportionately. The private system comprises all the pipes up to the point of connection with a public sewer (this can include the entire system where it is connected to a septic tank, cesspool or soakaway). Formal records indicating the location of private drainage systems are not held by any of the risk management authorities. The deeds of a property may include these details.

2.1.4.3 The highway surface water drainage of all adopted public roads, other than trunk roads or motorways, is the responsibility of the county council as the local highway authority, including roadside drainage gullies and certain roadside ditches. Drainage from trunk roads and motorways is the responsibility of Highways England. Drainage of private unadopted roads is normally the responsibility of private property owners who make use of or adjoin the road.

2.1.4.4 Land drainage comprises systems of rivers, watercourses, ditches, culverts, pipes, lakes, and ponds intended to drain water resulting from rainfall and flows from underground sources. Typically, the primary responsibility for maintaining flows in land

drainage systems lies with the riparian owner or owners. The lead local flood authority, Environment Agency, internal drainage board and/or local councils hold enforcement powers to use if the landowner/s default in their duties.

2.1.4.5 All drainage systems eventually discharge into the sea as the lowest possible point for water to collect. In Lancashire, this is at Morecambe Bay or the Irish Sea directly.

2.1.4.6 All drainage networks are formed from combinations of these systems to overcome historic demands of efficiency, simplicity, and convenience. For example, a highway gully may well connect to a length of highway drainage pipe before connecting to a private ditch, or a public surface water sewer, or directly to a main river. The original reasoning for these arrangements may now be forgotten or inappropriate for current needs, but the physical interconnection of drainage systems means that it is often impossible to tell just from looking at flood water exactly where the barrier to flow arises and therefore exactly which organisation may need to take remedial action.

2.1.4.7 It is therefore vital for the risk management authorities to share information and collaborate during investigations and that they are allocated to the appropriate organisation to lead.

2.2 Key Functions of the Flood Risk Management Authorities

2.2.1 Environment Agency

The flood risk management responsibilities of the Environment Agency include the following:

- a. strategic overview for all forms of flooding;
- b. provision of a National Strategy for Flood and Coastal Erosion Risk Management to cover all forms of flooding;
- c. a power to request information from third parties in connection with flood risk management duties. Risk management authorities have a duty to co-operate with the Environment Agency in the provision of such information;
- d. a duty to co-operate with other relevant authorities in the exercise of flood risk management functions, which may include the sharing of information with other relevant authorities;
- e. a duty to have regard to Local Flood Risk Management Strategies;
- f. a duty to be subject to scrutiny from lead local flood authorities' democratic processes;
- g. responsibility for managing coastal flooding;
- h. responsibility for managing fluvial flooding from main rivers;
- i. updated provisions for the regulation of reservoirs;
- j. permissive powers to carry out maintenance work on main rivers under Section 165 of the Water Resources Act 1991;
- k. the provision of flood forecasting and warning services;
- l. the provision of flood maps;
- m. the provision of flood related information and advice;
- n. investment in flood defences, supplemented through partnership funding where appropriate;

- o. a power to take enforcement action where flow in a main river has been impeded and may cause a flood risk.

2.2.2 Lancashire County Council

2.2.2.1 The county council has a dual risk management role, in its capacity as both highway authority and lead local flood authority.

2.2.2.2 The lead local flood authority has a number of duties and powers, in addition to the duty to investigate flooding set out above. These include:

- a. a duty to develop, maintain, apply, monitor and consult on a local flood risk management strategy for its area (copy available from the county council's website www.lancashire.gov.uk);
- b. a duty to develop and maintain a register of structures or features which might impact on flood risk, including ownership and condition (the Flood Risk Asset Register is available on the county council's website www.lancashire.gov.uk);
- c. the management of the consenting process for works that are likely to affect the flow characteristics of ordinary watercourses (Land Drainage Consent – guidance available on the county council's website www.lancashire.gov.uk);
- d. a power to undertake works for managing flood risk from surface run-off or groundwater;
- e. a power to request information from third parties in connection with flood risk management duties. Flood risk management authorities have a duty to co-operate with the lead local flood authority in the provision of such information;
- f. a power to designate structures and features that affect flooding or coastal erosion.
- g. a power to take enforcement action where there is an obstruction to an ordinary watercourse that may cause a flood risk.

2.2.2.3 The county council as the local highway authority has a duty under the Highways Act 1980 to maintain highways that are maintainable at public expense. This includes responsibility for highway drainage, as well as for the condition and safety for users of all highway assets including roads, footways, bridges and culverts, street lighting and traffic signals.

2.2.2.4 As local highway authority, the county council has a duty to co-operate with other relevant authorities in the exercise of flood risk management functions, which may include the sharing of information with other relevant authorities

2.2.2.5 The county council also has private responsibilities for land drainage where it is a land owner.

2.2.3 City and Borough Councils

2.2.3.1 The flood risk management responsibilities of City and Borough councils include the following:

- a. a power to designate structures and features that affect flooding or coastal erosion;
- b. a duty to exercise their flood risk management functions in a manner consistent with local and national strategies, and to have regard to those strategies in their other functions;



- c. a duty to be subject to scrutiny from democratic processes;
- d. a power to do works on ordinary watercourses;
- e. a duty to co-operate with other relevant authorities in the exercise of flood risk management functions, which may include the sharing of information with other relevant authorities;
- f. a power to take enforcement action where there is an obstruction to an ordinary watercourse that may cause a flood risk.

2.2.3.2 City and Borough Councils have a number of wider functions and roles that can be relevant to flood risk management and response. These include local planning, housing, environmental health and community engagement activity, as well as private responsibilities for land drainage where they are a land owner.

2.2.4 Internal Drainage Board

2.2.4.1 An internal drainage board is a local public authority established in areas of special drainage need in England and Wales. Internal drainage boards have permissive powers to manage water levels within their respective drainage districts. They undertake works to reduce flood risk to people and property and manage water levels to meet local needs.

2.2.4.2 The expenses of an internal drainage board are predominantly funded by the local beneficiaries of the water level management work they provide. Each board sets a budget for its planned work in the forthcoming year and any investments it needs to make for future projects.

2.2.4.3 More information about internal drainage boards can be found from the Association of Drainage Authorities (www.ada.org.uk).

2.2.4.4 The Earby and Salterforth internal drainage board covers part of Lancashire affected by the flooding event to which this report refers. This board has recently entered a collaborative partnership with other boards to access resources and expertise which may be available to contribute to the Section 19 investigation process.

2.2.5 Water Companies

The flood risk management responsibilities of water companies (in Lancashire: United Utilities plc and Yorkshire Water plc) include the following:

- a. a duty as sewage undertakers under Section 94 of the Water Industry Act 1991, to provide & maintain sewers for the drainage of buildings and associated paved areas within property boundaries;
- b. responsibility as sewerage undertakers for lateral drains and public sewers, the latter being defined as a conduit, normally a pipe that is vested in a Water and Sewerage Company, or predecessor, that drains two or more properties and conveys foul, surface water or combined sewage from one point to another point and discharges via a positive outfall;
- c. responsibility for any flooding which is directly caused by its assets – i.e. its water or sewerage pipes;
- d. a duty to be subject to scrutiny from local flood authorities' democratic processes;

- e. a requirement to exercise flood risk management functions in a manner consistent with the national strategy and guidance and have regard to the local strategies and guidance;
- f. a duty to co-operate with other relevant authorities in the exercise of flood risk management functions, which may include the sharing of information with other relevant authorities.

2.3 Civil Contingencies Responsibilities

The flood risk management authorities listed above (with the exception of the internal drainage board) have additional responsibilities under the Civil Contingencies Act 2004, which provides the statutory basis for dealing with a response to flooding in emergency situations. These include flood preparedness planning and flood response.

SECTION 3 – METHODOLOGY - Interpretation of the Section 19 Duty

3.1 This covering report records the flooding events in Lancashire of 12 July 2021.

3.2 Appendix A records the communities affected by flooding during this period, and the nature of the flooding where that can be confidently expressed. It also identifies the risk management authorities with functions relating to each flooding mechanism, any work known to have been done to mitigate the risk of that type of event happening again, and any investigations or works for risk management authorities still to complete.

3.3 Appendix B records the individual streets on which various flooding incidents have been reported at the time of publication of this report.

3.4 The individual risk management authorities will be able to provide further details of their specific investigations and any further works arising if required; our Section 19 report does not include these further details.

3.5 Drainage networks interconnect in sometimes complicated ways for historic reasons. Partnership working and joint investigations between the risk management authorities are essential to identify the appropriate options in all communities and to deliver flood risk management improvements.

SECTION 4 – THE WEATHER EVENT

4.1 Various weather impacts were experienced over England throughout the weekend of Friday 9 July 2021 to Sunday 11 July 2021, with thunderstorms in Norfolk, lightning in Cornwall and Scotland, and long periods of low cloud and showers over the North West including Lancashire.

4.2 Monday 12 July 2021 brought rain to the north of England through the morning. During the afternoon, the Met Office Regional Advisor reported that a band of locally very heavy rain had been identified arcing across from Lancashire into North Yorkshire which could result in a few localised impacts before the evening, mainly surface water-based but also perhaps from narrow fast-responding water courses. Elsewhere within the broader area of rain covering the southern half of Northwest England up into North Yorkshire, there were a few pockets of much heavier rain also in evidence, mainly across South Lancashire. The Advisor reported that the odd localised impact was possible from these before the evening. The whole area of wet weather was expected to gradually shrink and diminish in intensity as the afternoon wears on, though the Advisor thought that it could be well into the evening before the rain finally died away.

4.3 The actual weather conditions experienced in Lancashire are referred to in the following section of this report.

4.4 By Tuesday 13 July 2021, the heavy rain had moved away from Lancashire.

SECTION 5 – RESPONSE TO THE FLOODING

5.1 The county council's Highways operational teams started to receive reports of roads flooding (and in some cases the standing water extending onto private property) from around 1230hrs on Monday 12 July 2021. Urgent responses were initiated during the working day, and call-out teams continued to be busy through the evening and overnight. The reports identified problems in multiple locations across the county including Skelmersdale, Aughton, Ecclestone, Leyland, Preston, Lytham, Burnley and Bacup. The response to these reports continued through following days until all reports of dysfunctional highway drainage had been attended to and addressed, including the example shown in the photograph below at Figure 01.



Figure 01 – Coote Lane/Leyland Road junction, Lostock Hall

5.2 At 1615hrs, Highways England (now National Highways) advised that one lane had been closed on the M6 southbound between junctions 32 and 31A due to flooding. Maintenance crews were called to the scene and the lane reopened around one hour later.

5.3 Railway passengers were advised during the evening of 12 July 2021 about urgent repairs to Preston station's lifts and subway after they were damaged by freak flash flooding. Network Rail reported that intense rainfall at platform level made its way into the subway which serves four station lifts. All the lift shafts were affected and engineers needed to pump out remaining water and clear the debris to enable urgent repairs to be made to the lift mechanisms.

5.4 Neither of the water and sewerage companies serving Lancashire, United Utilities plc and Yorkshire Water plc, reported any significant incidents associated with their assets on 12/13 July 2021. The Environment Agency also did not report any significant incidents associated with their assets, or relating to river or coastal flooding.

5.5 Despite the multitude of individual flooding reports, none of the emergency responding authorities identified that they needed the support of the Lancashire Resilience Forum during or after the incident.

5.6 Appendix A to this report records the various experiences in different communities affected by flooding during this rainfall event. It identifies the following information:

- District Council area;
- Settlement/locality where flooding was reported;
- Number of properties known to be affected by flooding;
- Our assessment of the primary flooding mechanism/s in that locality;
- Which flood Risk Management Authorities have had a role in managing the flood risks identified;
- What has been done as a consequence of receiving the flooding reports from local people, and/or what more is required at the date of publication.

5.7 Appendix B records the names of the streets reported to the county council, where property is known to have flooded during this event. It is considered good practice to record all types of property flooded including homes, gardens/outbuildings, community assets/public highways and other private property including schools, offices and business-premises.

5.8 Because many incidents related to standing water on the public highway which disappeared quickly once the rainfall ended and water levels returned to normal in rivers and ordinary watercourses, in this Section 19 investigation we have only taken account of local highway flooding where it directly relates to the reports we received of flooding to properties.

SECTION 6 – NEXT STEPS

6.1 Where appropriate, the flood risk management authorities' options for further action are identified in Appendix A as part of our report into the way they each responded to this flooding event.

6.2 Whilst some funding has recently been made available to Lancashire Highways to address localised defects in the highway drainage systems, there are no programmes for the county's highway authorities to invest more routinely in up-scaling their drainage networks to provide additional surface water capacity for rainfall events of this nature.

6.3 The county's water and sewerage companies are starting to invest in different ways of managing excess surface water in rainstorms, to minimise the risks of flooding and of environmental contamination from foul water.

6.4 At the time of preparing this report, the lead local flood authority, Lancashire County Council, is continuing to work with United Utilities plc at a specific location in Aughton, where a public surface water sewer discharges to a partially obstructed culverted watercourse. This work will continue until the sewer discharge is successfully restored, after which the relevant riparian landowners will be informed as clearly as possible of their enduring responsibility to maintain the flow in the watercourse in order to manage flood risks to their neighbours.

6.5 Depending on particular local circumstances, further appropriate activity to manage surface water flood risks can include any combination of the following suggestions:

- Improved drainage system maintenance regimes including better-targeted maintenance activities;
- Creating increased areas of absorbent land within urbanised streets (for example more trees and shrubs, increased unpaved areas in highways, gardens, drives & yards);
- Establishing temporary road closures to reduce bow waves washing off streets onto private property;
- Installing improved protection against water-ingress at vulnerable properties;
- Extending the current 'warning and informing'-type communications to trigger appropriate local action, deployment of temporary defences etc.

6.6 Measures of these types can be very effective at managing the peaks of an intense rainstorm, and at giving local people more control over the way they are affected in such weather conditions. All the risk management authorities are ready and willing to work with local community groups and Town and Parish Councils to identify and introduce measures appropriate for their local circumstances.

6.7 Any individuals who want to consider what they might do for themselves will find practical suggestions on the dedicated website: the Flood Hub: thefloodhub.co.uk

6.8 Working with communities and working in partnership are key recommendations of the emerging national flood risk management strategy. Lancashire's flood risk management authorities are all committed to finding better ways to make our offers more widely known about, and to helping people to access our teams for advice.

SECTION 7 – SUMMARY AND CONCLUSIONS

7.1 The rainfall event of 12 July 2021 was extreme enough in some locations of Lancashire to overwhelm local drainage networks and cause flooding to homes, workplaces and strategic transport infrastructure. Affected people were extremely concerned for their own safety and for the damage that occurred to their buildings and belongings, and travel was significantly disrupted for many public transport passengers and for drivers on the regional primary road network.

7.2 Given that flood risk will always be present in a large county area such as Lancashire, it is important that the county council, as lead local flood authority, records the experiences arising from this and all notable flood events, ensuring they are captured and used alongside technical information to identify and deliver improvements and advice to affected people.

7.3 Our investigations find that it would be unrealistic for anyone to expect a substantial investment in the near future to increase the capacity of their local highway drainage systems, as there is currently no investment targeted at such works and no plans to start new programmes of that type. However, the public sewer networks are now receiving attention (for environmental protection reasons as well as for flood risk management purposes), and we expect a number of projects to progress and provide improved resilience to heavy rainfall events of this nature in the future.

7.4 Our investigations find that the local highway authority's drainage records are not yet structured to support evidenced-based investment in sustainable highway drainage improvements.

7.5 We have also identified that it is realistic to look into better ways of managing flood risk within community areas, enabling local people to have more control of the way their homes and localities might be best protected through an intense rainfall event so that they might recover most swiftly afterwards.

7.6 It is hoped that the findings of our investigations will be developed locally to improve the flood resilience of the affected areas. From the experiences during and after this flood incident, the county council together with partner organisations are developing an improved understanding of the way our incident response, community engagement and data collection activities are interlinked. This is informing our development of improved procedures to respond to future flooding events to further improve the flood knowledge and response in the county.